

June 1951

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X-Y-Z

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①

Notes taken in 1932

0001

June 1 Left Holliston 8:20 A.M. - arrived St. Albans, Vt., 7:20 P.M. Travelled all day.

June 2 About 1 mi. S. of P. on E side of road to Stites Pond - lower 50' reticulated Dolomite. Underlying Rock River formation, unfossiliferous. on west side of main road.

Wallace Creek formation -  $\frac{1}{2}$  mile S of P. and on St. Armand road. Stites Pond at east and N side of road. Wallace Creek on N side of road about 30 yds. from road. Contact of Wallace Creek & Stites Pond unconformable - W.C. very fossiliferous at base. Upper Wallace Creek Dolomitic toward Morgan Corners formation overlying W.C.

$\frac{1}{3}$  mile E of Phillipsburg are imbricated blocks (slices) of Wallace Creek in Morgan Corners formation. Very fossiliferous containing many "Syntrophina". This slice (or slices) are from the upper part of the Wallace Creek probably. There is no proof of this as these rocks have not been seen in the main mass of the Wallace Creek. The chief brachiopod in the W.C. blocks is a Syntrophina like shell. The shell & another suggest Canadian. There are also Polytoechia-like shells.



0002

(3)

June 4

Traveled from Phillipsburg to Montmagny.

June 5.

From Montmagny to Matapedia

Just at the village limits of Val Brilliant I stopped to collect from the Val Brilliant sandstone, a hard quartzitic rock. From loose blocks excellent Pentameroides were obtained.

June 6

1.2 miles east of Dawsonville, new road cuts in very hard heavy bedded massive calcareous sandstone. Dipping steeply to N.E. Conchidium very abundant, Strophomena, Stenotopora, corals. May be Crileman's St. Leon formation.

June 7.

Spent most of day collecting from the La Vieille (at Quinn's Point, 3 miles East of Jacques River). Fossils are not abundant and are hard to get. It rained in spots most of the day and was very cold and windy.



④

June 8.

Snow and rain all morning. In afternoon went to Black Rock and collected for about 2 hours. Was unable to find bed with complete small Stenelundias although I saw many poor separate valves. I believe that the beds at Black Point are not La Vieille but I don't know where they go in the section. Perhaps they are uppermost Clemville. Lithologically the beds are not unlike those of the La Vieille being knobby, there is an evident lack of corals, & Stromatopores as compared with the Quinn Point exposures.

June 9.

Rain most of day - went to Dalhousie with Dr. Smith. Collected about 6 hours. Stewarti bed is mostly of soft ash. Shells abundant collected in beds at brook which were quite bare. Beds 8 & 9 I think are inseparable.

June 10.

Rain all day - prospects of clearing not good. packed one box.



June 11

2 1/2 paces towards Cape Bon Ami from the "Stewart" bed are about 10 or 15' (horizontal) of hard sandy sh. ss. and ash beds which I shall call bed 17. These are exposed at low tide only. Collected fossils all day - Good day.

June 12

Dip on bed  
7 is 52°  
NNE

Sunday - returned to Dalhousie chiefly to take notes and collect from beds exposed at low tide only. Bed 7 is in contact with the Barbrine andesites which are amygdaloidal in the upper part. Bed 7 is hard arenaceous limestone containing many corals. The lower contact is very irregular and the lowest bed is a hard ls. 1-2' thick. Bed 7 is 5 to 7' thick. To my mind the fauna of bed 7 is essentially the same as that of 8-10. except there are more corals in 7.

Bed 8 - sandy sh, ashy, bluish grey weathering brownish on surfaces, said to be 20'. I see no definite separation from bed 9. faunally or lithologically. Has clams like bed 9.

Bed 9 is the one from which most of the large & good fossils come. The brook cuts thru about the lower third of the bed.





$$\begin{array}{r} 97 \\ 6 \\ \hline 12 \overline{) 582} \\ 49 \end{array}$$

$$\begin{array}{r} 97 \\ 2 \\ \hline 194 \\ 49 \\ \hline 243 \end{array}$$



0004a

Strike +  
dip on  
ls bed (2')  
N 51° W  
46° NNE

A considerable distance NE on the beach, is a bed of ls. about 2' thick, called bed 15 (as near as I can make out) for which no list of fossils is given. The bed is crowded with *R. stewarti* + *S. concinnus*. For 25 paces SW on beach from this bed (Howard Brook) *R. stewarti* occurs (This I call *R. stewarti* zone.) From contact of bed 7 and Barberie Decite it is 97 paces or about 243'. According to the book (Howard) there are 180' between the hard ls + the contact.

I fail to see the usefulness of beds listed by Howard as it is nearly impossible to identify them. I saw no *R. stewarti* in the bed 11, but they were abundant in beds 12-15. It seems to me it would be better to call the section by the name of zones.

Bed 0 - coarse arenaceous shales  
N 55° W 50° NE. Dip on bed 1 - 2 N 65° W 49°  
Dip + strike on hard ls about 200 yds NE of  
base of Bed 1 = N 45° W 45°.



June 13.

350  
90  
440

175  
6

4450  
87

90

Packed boxes in morning, departed for Campsbellton where I met a Mr. H.A. Carr who helped me get my stay in Canada lengthened. Left for New Richmond from Matapédia at about 2 P.M. arrived 5 P.M.

After supper collected from Pleistocene at New Richmond. Clay with abundant Lenticularia rests on Bonaventure conglomerate. Clay from 10-20' thick. A similar clay with Nysa was seen above the Devonian at Dalhousie (Stewart's Cove).

June 14

Black Capes — Glenville  $N36^{\circ}E60^{\circ}SE$  thin bedded sandy shale & limestone alternating. Contains Coeloceras and Chonetes. Thracia is at least 30' exposed.

La Vieille — knobby ls., sandy & shaly, bedding uneven. Weathers to a mottled reddish and ash grey. Streblandia abundant. In base  $N60^{\circ}E61^{\circ}NW$ . I made the La Vieille about 450' feet by pacing. The Gascons succeeds the La Vieille. The upper La Vieille is less knobby and a little darker in color.

Lower Gascons less heavily bedded than La Vieille  $N52^{\circ}E63^{\circ}NW$

Dips here are SE.



0006

Upper Gaccons is made up of  
red & green sandy shales  
S 78° E 55° S. Fossils are not  
abundant but lime bands have  
sponges, corals & Bryozoa.

June 15  
Stayed at Herbert & Journeaux's home  
Indian Point - Gray crystalline ls. dipping  
40° SE and striking N 30° E

June 16  
Anse à la Vieille - Great thickness  
of knobby ls. underlain by ss.  
Dipping N 51° W 29° S. Fossils abundant  
but hard to get.

June 17  
Collected from West Point ls. all  
day at Reddish Pt. Rock exposed  
as rounded (from solution) masses  
of reddish & light massive limestone.

June 18  
Collected cephalopods in morning  
at Anse à la Barbe. Afternoon  
visited Pt. L'Enfer for about  
1 hour then went to West Point  
and collected Bonheur fossils.



Population 1200 For Center, E/W -  
Industry  
Topography  
General plan  
" appearance



June 19

Collected Clemville at Clemville.  
most soft crumbly arenaceous  
sh. and harder ls. bands.  
Fossils common but hard to get.

Port Daniel, small village whose main  
industry is fishing. Some farming done  
by inhabitants, several sawmills in  
town. General appearance is poor, most  
of people are poor. One lobster canning  
factory. One large new hotel. One  
Hotel Defunct (Le Grand's) and Hotel  
Port Daniel closed up. The village consists  
essentially of 3 parts Port Daniel West,  
Port D. center & Port Daniel East or the  
main portion of the village. Port  
Daniel River forms a Barrachois at P.D.  
East, R.R. and village located on the bar,  
Covered bridge over Fichle. Same for  
Little Port Daniel River at Port D. center  
P.D. is surrounded by low ridge-like  
hills. The West Pt. limestone is one of the  
main ridge or hill formers. This is  
shown at Pt. L'Enfer where there is a  
ls. quarry, the ridge running N from the  
Point. From West Point to Chouinard Point  
the ridge and cliffs are held up  
mainly by West Pt. ls. The Gaseous  
commonly forms the low ground  
being arenaceous sh. or ss. and  
arenaceous ls. This runs the bay  
at Port Daniel West and also  
forms the low ground at  
Chouinard Brook & Anse aux Gaseous.



At Anse à la Pêche, low cliffs  
rim the shore which are formed  
of the Upper Bascons but. & inland  
from these is a ridge, the back-  
bone of which is West Point Trinidad.  
The La Vieille makes high ground  
from Port Daniel (St. Georges Church)  
to the north, and in the vicinity of  
Clemville.

Population of Port Daniel 1776, founded  
1855. Fishing, ls. quarrying, agriculture, a  
little lumber.

New Richmond - Pop. 2,534, founded 1831 - Mostly  
farming & lumbering.

Pence Parish founded in 1854 -  
Fishing & agriculture, Butter factory,  
cod liver oil plant, lumber for local  
consumption.



Pence

June 21 - Arrived about 11 A.M. lunched and went immediately to collect from the Cap Blanche formation in the South flank of Mont Joli. Trilobites are still plentiful in the thin band that carries them but they are difficult to get at.

June 22 - Rain + fog - Went behind Ste. Anne to the Amphitheater, locs. 5, 5a and collected. Collecting good in the thin ls. bands. Rock mostly a soft rotten shale containing innumerable thin-bedded ls. In places alternation of ls. + sh. frequent, others no lime and in still others argillaceous ls. abounds, but nowhere is it just pure ls.

Collected at F<sub>1</sub> on Priests road. Blocks are difficult to find along the road.

June 23 - Spent 2 hours of morning at South flank of Mt. Joli for more Trilobites. They are now very difficult to secure. Spent afternoon at F<sub>6</sub> + F<sub>7</sub>. Former is now has very few good fossils. F<sub>7</sub> is no longer any good.

June 24 - Rain all morning



Daniel J. Cunningham & Thomas Gault  
 collected on the St. John River.  
 Left book on mineralogy  
 English ESE of Haldimand Head.  
 in a new scallop bed.

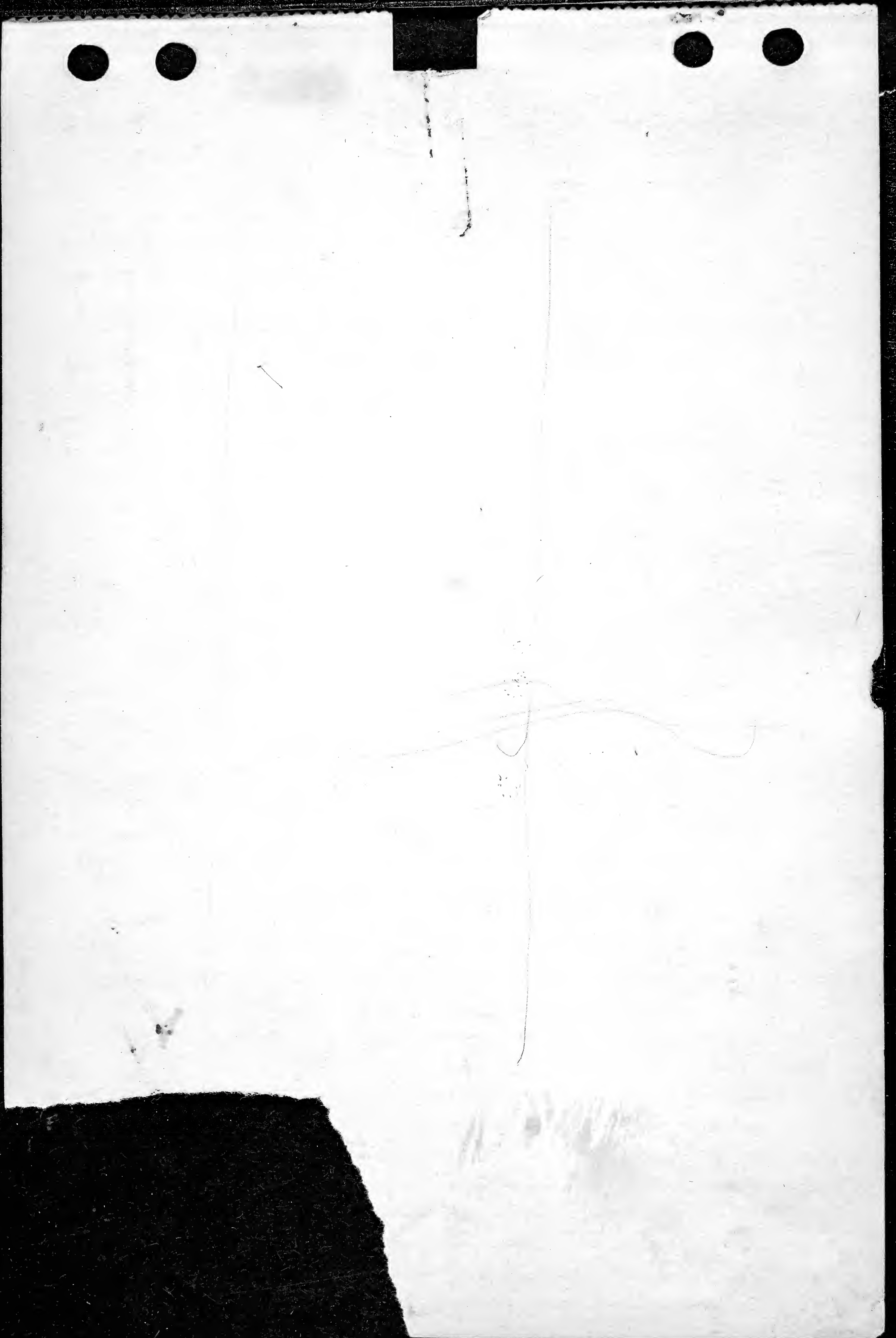
Get Mr. Richmond a lens.  
 Sunday July 17 arrived at Port Antonio  
 Mon July 18.

Tile Factory - Stream running NE near  
 road along side of tile factory is not  
 White Creek but a branch of it. In  
 front of the house (first S. of tile factory)  
 on SW side of road the Tichenor is  
 exposed in the gutters and a little to the  
 N at the P. Point is exposed. Tichenor  
 also exposed in bed of stream.

Tue July 19.

The hard layer in Black Creek  
 at Canada that I thought  
 might be Stafford proves to be  
 a hard band, probably of the  
 Shearwater.







0011



October 8, 1934

Washington - Wytheville.

October 9.

Visited Ottosee localities in vicinity of Rye Cove. Ottosee is heavily calcareous shale. Trilobites and slabs contain fossils as well as shale. Echinodermans can be collected  $1\frac{1}{2}$  mi. S of west of Rye Cove near an old brick school. Collecting is good if one hunts hard.

October 10.

Collected from Ottosee?  $3\frac{1}{2}$  miles SW of Horn Hill. Here found small *Oligorhynchina* at one level. The beds containing them were called Ottosee by spec. They underlie the red Holston Marble west of Rockwood.

Oct. 11.

Rockwood to Camden - spent hours on more collecting. Trilobites in Rockwood and Camden 8 miles west of Nashville.

Oct. 12.

Collected from the Camden sheet from pits of Nashville, Chattanooga + St. Louis Ry., and the Camden Gravel Co.

Oct. 13.

Collected Birdwing fossils on farm of Will Love. This is reached by going on Hy. 69 south 10 miles toward Holladay, then turning south west on old road. Love's farm is 0.9 to one mile on this road. The exposures are just south of the farmhouse near a small creek and along the



old road to Holladay.  
 Late evening collected  
 Harniman chert 11.5 miles south  
 of Camden.

Oct. 14.  
 Camden — Walnut Ridge, Ark

Oct. 15,

Morning to Black Rock Quarry. Yellow  
 gray dolomite and massive, brittle  
 gray limestone. Fossils scarce.  
 Afternoon spent on piles of excavated  
 earth from manganese prospect  
 pits. Snails abundant by brachiopods  
 very rare. Pits located 1.4 miles  
 N by east of Smithville. Arrived Batesville  
 4: P.M.

Oct. 16.

Searcy Mine — Collecting all day.  
 Only chert bed about half way up?

Oct. 17.

Collected at Searcy mine all day.  
 Go east on Hwy 111 about 5 miles  
 from center of town (Barnes Hotel)  
 to # about opposite Pfeiffer and go  
 west on second road crossing H 11.  
 Follow this 3 miles to Cave Creek.  
 Go on Cave Creek road two miles to  
 spring bearing right at intersection  
 0.3 mile northeast of point where  
 Pfeiffer & Cave Creek roads meet.

Oct. 18.

Collected at Coon Mine and  
 6-7 miles West of Batesville and  
 at White River Junction.



Oct. 19.

Collected at Cason Mine. Found  
Minulus about 20' from (above)  
Strophomenella beds. Packed boxes  
4:30 - 5:30.

Oct. 20.

Collected at Cason Mine - real  
Minulus occurs so low as the  
beds with Strophomenella (mineralized)

Oct. 21.

Packed fossils and headed bags.

Oct. 22



October 11

Collected Percha shale east of Silver City. Go east of Silver City to New Mex Hy. 180 which comes into main road at Central. At Santa Rita take road for Georgetown and Mimbres. 1.4 miles east of Georgetown black shale appears. Then comes the gray (yellow) Percha above abounding in fossils. At Hajjin turn in Mimbres the Percha appears to the north in a small ravine. Here it is very fossiliferous and all the New Mexico species described by Kindle can be found. The hills on both sides of the valley contain Percha shale and this is an excellent place for further investigation.



October 12.  
El Paso

At lookout over El Paso is contact of El Paso ls. and Montoya limestone. Upper part El Paso very fossiliferous and contains brachiopods suggesting Odenville.

In afternoon went to Van Horn via U.S. 62 and Texas 54. First mountains east of El Paso are Hueco Mtns. Road enters Pow Wow Canyon. Not far inside the entrance a view to the north shows two small knobs just west of a high Peak. Westernmost knob is excellent collecting place for Hueco fossils.



October 13.

Beach Mtn section exactly  
10 miles north of Van Horn.  
Lower part mountain with  
Bliss ss. showing scolithus  
tubes. Then follows ls + dolomite  
of lower Canadian age about  
50 feet in all. Syntrophina was  
common. Above this came about  
40 feet of coarse ss. Above the  
second ss. comes Ceratopora  
incuvata zone. Just above the  
Ceratopora come brachiopods  
suggesting Oligorthis oklahomensis.  
Following this come two more  
Ceratopora zones in the upper  
part of about 800 feet of limestone  
and dolomite. At top of section  
come 50<sup>±</sup> feet of nodular  
dolomite weathering yellow +  
crumbling to small fragments.  
This contains many boulders.

Following the El Paso are  
ss and dark dolomite of  
Montoya formation



October 14.

Left Van Horn & went over to Marathon, arriving at lunch time. After lunch went to hill  $\frac{1}{2}$  mile north of Hess Ranch for Hess fossils. Cincoidal limestones contained brachiopods but specimens were rare and poor.

Oct. 15 spent at Split Tank. Take Hess ranch road, turn east behind Hess collecting locality and go east about  $7\frac{1}{2}$  - 8 miles. Split Tank is about  $1\frac{1}{2}$  east of the Grimmer Ranch. Collecting is best on north slope small hill east northeast of tank and also in shaly or sandy material about one mile east northeast of the tank.

Oct. 16 - Collected Split Tank in morning and Word formation west northwest of Word ranch. Collecting not good.

Oct. 17 - Collected Split Tank.

Oct. 18 - Packed boxes most of day. Visited graytongue bed on Alsate Creek. Go south of Marathon to picnic grounds then go west on road to J. J. Roberts Ranch to Alsate Creek. Went to Fort Stockton in night.



Oct. 19.

Thursday afternoon visited Mississippian outcrops Ellenburger on Llano River about 14 miles south of Mason. On south side of Llano opposite junction with Honey Creek, 14 miles S of Mason great reefs of Cryptozoa appear high in the Wilberns. One isolated reef about 40 feet high is especially fine.

Oct. 20

Travelled from Mason to Llano collecting Porolith on bank of San Saba River at ford east of Camp San Saba. Road to ford is about  $\frac{1}{4}$  mile south of San Saba River bridge north of Mason.

In afternoon made unsuccessful attempt to find Huerella in canyon of Cold Creek. We searched lower member of the Wilberns on the point of the hill 0.9 mile up the canyon and on the west side. Porolith was discovered 40 feet above Glee Lion Mtn. ss. which separates the Cap Mtn and Wilberns formations.



Oct. 21.

In morning went out to Plectrotophia Butte of Bridge for these brachiopods. Ellicifid specimens are abundant on top of this hill and adjacent hill to west. On east side of hill Huerfella was found, with Billingsella about 72' above base of section. Ran in afternoon saw several parts of the Ellenburger formation north & east of Cherokee.

Oct. 22

Left Lane for Austin. Studied Ellenburger between Round Mtn. & Bee Cave. Collected Cambrian (Acrotreta) one mile east of Sandy, P.O. Sent Bell a specimen.

Oct 23.

Spent day in Austin.



October 24

Left Austin for Cisco which we reached at 12 P.M. After lunch went to Eastland; then north on Breckinridge road for 12 miles. Then take dirt road east about  $\frac{1}{2}$  mile to Gunsight. Go south on road in Gunsight about 1.2 miles or just below first branch to east. Go east around base of hill to east-facing bluff for collecting.

Gunsight can be reached from Cisco by going about 3 miles north of intersection of Cisco + Breckinridge roads. After Gunsight went to Mineral Wells for the night.

Oct. 25

Collected at Union Hill school about  $6\frac{1}{2}$  miles NW of Mineral Wells. Take fence line N of school for  $\frac{1}{2}$  mile to collecting locality.

Called on Renfro. Send them Dumbor + Condra on brachiopods. They will take any fossils in exchange for things.

King Mountain  
Left to Renfro



October 26.

Send and papers  
on Pennsylvanian  
to Renfro

Spent day in field with Renfro. Collected at Salesville Quarry from a thin shale bench near bottom of quarry. Later in day collected on Ramsay place, 3 miles east of Jacksonboro, Texas.

Oct. 27.

Left Texas for Ardmore, Okla which was reached at lunch time. After lunch went to Rock Crossing. So south on Hg 77 for  $5\frac{1}{2}$ -6 miles. Take road going west for 1 mile west, then go south 1.1 miles then turn west for 0.7 mile to new bridge.

*Multicostella* with coarse ribs abundant in about 5' to east of bridge. Just above it come small *Strophomena*. Rock to at small *Strophomena* bed changes from fine lined stone to fine grained brittle ls. For a considerable distance above small *Stroph.* trilobites are common. About 50 below top of light ls. brachiopods are common. The lowest zone is *Doleroides*, *Hebertella* &



Strophothiris, Oxoplectra. Then follows uppermost beds with large Strophomena, large fine ribbed Multicoella, and brachiopods. Which calls all this whitish ls. Criner formation.

Oct. 28.

Look in Drake Coll. for silicified Rhynchotrema from Lawrence. Collected upper Criner in section 26 near Hickory Creek. Packed boxes. Then went to see section on Hwy. 77.

Oct. 29.

In morning went to Vines Dome which is about 2 miles NW of Dougherty. The Harigan str. leads into the road from Dougherty and can be easily recognized.

In afternoon we visited White Mound. Go south <sup>from Dougherty</sup> on Okla 18 to Nebo. Turn west for 3 miles to a gate facing a road going south. Go through gate to north. Bluff view west of pasture road about  $\frac{1}{4}$  mile from gate gives good collecting. The White Mound is about  $\frac{1}{4}$  mile farther to the W. The Harigan is a nearly limestone rather than a shale,



Oct. 31.

Collected lower Bronnide 1.5 miles west of Nbs by roadside. A thin layer 2" packed with *Valconera*.

Collected till noon on Hagen. Visited Quarry at Lawrence.

Nov. 1.

Oklahoma to Rolla, Mo

Nov. 2

at Rolla

Nov. 3

Morning went from Rolla to Lupus. Walked 2 miles SE of Lupus down RR track for Nehobemia. We failed to find them.

Afternoon went over to Clifton City to collect Callaway. 2 1/2 miles from center of village on road to south. X line Callaway 5-10' occurs Cooper. In upper 3-4' occurs peculiar lobate *Athyrid*.



Nov. 4.

Went southeast to Birch Tree  
 About 10 miles north of Birch Tree  
 is Pine Hollow school. On  
 slope north and northwest of  
 the school building blocks of  
 chert abound, that contain  
 many Gasconade fossils.  
*Synsphyria* is very abundant.

Nov. 5

Went from Van Buren to  
 Eminence to collect Eminence  
 fossils on Shannon Co. Hg F,  
 4 miles south of Eminence.  
 From here we went to Dutchtown  
 to see the Everton which is  
 exposed in the village. St. Peter  
 is well exposed by State highway.  
 Then we saw Seneca Quarry, the  
 type section of the Dutchtown  
 just east of Dutchtown. Dark  
 buffle thin bedded limestone  
 with ostracods and a foot thick  
 layer crammed with Lophospira.



1932, 1939,



November 11

Left Clayton and went to  
Conchidumb ledge and on to  
Kokomo for night.

Nov. 12.

✓ From Kokomo to Evansville, Ind.  
to see Carl Bays, who is to offer  
Museum his collections of  
Wisconsin, Ordovician.

Nov. 13.

Stayed in Boonville previous  
night & drove on to New  
Albany and called on Mr. Campbell  
about 10 AM.

Went to Salem RR cut for oolite  
Then west of Borden for  
Syringothyris

✓ Send Mr. Campbell any  
Devonian Bryozoan literature.  
Send Mr. C. a set of Hamburg  
oolite. Send Mr. G. a recent  
Trigula.

✓ See Sutton Jour. Geol., vol. 45,  
no. 3, Apr. - May 1937, for new  
term Speeds which is same  
as Mr. Campbell's bed D. May =  
all of Delaware

Cigar box & Cotton for loose  
specimens.



Mr. Campbell's new address  
will be 40 Stephens Kirkham,  
Corydon, Indiana.

Send Mr. C. my paper on  
Paleoecology. Also West studies  
brachs.



1940, 1941



4.59

Trip to Texas and Tennessee  
1940

7.94

Aug. 6 - left Washington 7 A.M. arrived  
Morristown, Tenn. 16 P.M. Central time

12.86

Aug. 7 - left Morristown, Tenn. 6:30 A.M.  
arrived Memphis, Tenn. at 6:20 P.M.

11.61

Aug. 8 - Memphis to Little Rock, which was  
reached at 10: A.M. Had car greased & oil  
changed. Drove on to Mt. Vernon, Texas in  
rainstorm.

11.62

Aug. 9. Left Mt. Vernon 7:45 A.M. reached Fort  
Worth 12:30 P.M.

0.85

Aug. 10. Collected in Finis shale at  
two localities. 1. on each side of road  
0.3 miles NE of intersection of Old Chico  
road with Wizard Wells road, and 2.  
on each side of hills from  $\frac{1}{2}$  - 1 mile  
north of locality 1. Intersection of  
Wizard Wells - Old Chico road is 3.2 miles  
east of Jackboro Courthouse

Quite a question over name of this  
shale M. R. thinks it is upper Finis.

2. Hills  $\frac{1}{2}$  - 1 mile north of locality 1.

2.2.2

Aug. 11. First locality visit was Finis  
shale along Rock Island RR about  
0.2 mile east of bridge on Texas 199, 3.7  
miles SE of Jackboro. Collecting good.  
Also collected along base of hill  
 $\frac{1}{2}$  mile NE of above locality.

One half mile S of Chico-Jackboro  
dy. (Texas 24), 5 miles NNE of Jackboro  
Courthouse on old Gunter Ranch  
are extensive exposures of shale in  
Jackboro ls. Collecting good. Upper bed  
abounds in Quadrina.

L



1.69 Aug. 12. - Visited at Texas Christian Univ.  
Met Gayle Scott.

0.90 Aug. 13 - Along Hwy 199, 6 1/2 - 7 miles  
northwest of Jacksboro occur  
exposures of shale and ss. The  
shale contains ironstone nodules  
that break up and yield good  
fossils, rhynchonellids and sp. Texas  
The shale contains a few fossils  
notably small goniatites. Visited  
three localities in this vicinity.

1 1/2 miles SW of Barwick, Jack  
County, occurs a hill, called Potato  
Hill, probably 80-100' high. The top  
8' of this hill contains fine productids  
Neospirifer and fusulinids.

2 pictures of Potato Hill.

3.34 Aug. 14 - Went to Graham to look  
for Jackboro. Saw section at dam  
1/2 mile north of bridge 1 mile west  
of Graham. In Wayland just above  
Gussett is fossils occur.

Collected Hog Creek sh. NW of  
Jacksboro. Collected Jackboro shale  
6 1/2 - 7 miles NW of Jacksboro. Collected  
in Hunderstown.

2.07 Aug. 15. Morning visited Kannon Bridge  
ls. near Brock. Afternoon collected  
shale in Palo Pinto Co. 2.9 mi. W of  
road junction of Santo road & U.S. 80.

10.92 Aug. 16 - Worked low hills extending  
NE from bridge on Texas 199 out  
the Rock Island RR. These hills  
extend NE to Kannon place east  
of Jacksboro. Collected Jackboro  
shale for a mile. A glade 1 1/4 mile  
NE of bridge is apparently Finis  
shale.

2.

Collected 1/2 mile West of Bridge, also



③

0035

in Finis shale. This locality is along an old abandoned RR.

Aug. 17.

1.93 Texas 199,  $\frac{1}{2}$  mi. NW of Junction with US 281 and  $\frac{1}{2}$  mi. S of road where we collected Necessity shale.

Collected on old Gunter Place in Jacksboro shale.

2.55 Aug. 18. Visited localities in Jacksboro southwest of Jacksboro

3.89 Aug. 19. Called on Powell Goodwin in Archer City, Texas. Collected Shifty formation east of US 281 on road 3.6 miles northwest of Junction of US 281 & Texas 199. One exposure is 0.6 mi. east of US 281 on dirt road. The other is  $\frac{3}{4}$  mile S (downstream) on a small creek 2.9 miles northeast of US 281.

1.58 Aug. 20. Collected Gonzales shale at two localities, one 3.9 miles NW of Finis and the other 5.3 miles NE of Finis. Former locality rich in small snails, latter one in clams. Found Poikilozach at both places.

3.55 Aug. 21. Riley place, both sides off hill about 5-6 miles NE of Jacksboro. Fine collecting.

Pictures 1, 2 - Potato Hill

3, 4 - Gonzales shale & Bringer ls.

3.9 miles NW of Finis

5-6 & Renfro.



ENE



1. West face of hill on  
Riley Ranch, about 1.5  
mi. N. of Riley Ranch House  
and about 5-6 mi. ENE  
of Jacksboro.

2. East slope between  
2.5-3.5 mi. N of Riley  
Ranch House,



2.38 Aug. 22 - Riley House at junction of Old Chico and Winard Wells roads about 3.2 miles E of greenhouse in Jackson. Visited Ramsey place. Not as good as last year.

7.46 August 23 - Left Fort Worth 7 A.M. arrived Fort Stockton 5:30 A.M. Spent hour in McCamery shopping and having car serviced

2.45 August 24 - Left Fort Stockton about 8 A.M. and arrived in Marathon at 9:30. Went to Split Tank and collected for rest of day.

2.03 Aug. 25 - Went to Split Tank collected Lower half of Leonard.

Aug 26. Pictures 7. south face Leonard NW  
8. East face L.M. from Hess R  
9. Fault NW of Hess Ranch

Went to Split Tank, made large collection! All told have as much stuff as collected in '39.

Aug. 27 - Collected Gap funk, fossils east of highway  $1\frac{1}{3}$  miles (2000') and about 2.6 miles NNE of Marathon (Kings loc p. 43). Apptacanthia fairly common in middle exposure.

1.59 Aug. 28 - Back to Split Tank. Collected all day. Now have fine collection.

Aug. 29 - Morning collected at Word Ranch found goniatites. At 11:30 went to Word locality north of Hess Ranch. Rained out at 1:30. Spent afternoon wrapping fossils.



Aug. 30. Collected all day in  
Word formation about 6 miles  
N of Hess Ranch.

20.24 Aug 31. Collected all day at Gay Tank.  
Heavy rain in evening. Packed  
two boxes.

Sept. 1 Packed boxes all day  
long. Rain in afternoon.

7.22 Sept. 2. Collected Word N of Hess Ranch  
in afternoon. Rain all morning.

2.74 Sept. 3 - Collected Word N of Hess R.  
and at head of Hess Canyon

Sept. 4 - Collected Wolfcamps in  
Wolfcamps Hills.

Sept. 5 - Spent all day packing

16.58 Sept. 6 - Shipped boxes - Collected Hess

Sept. 7 - Came from Marathon to Cisco,  
Texas

2.75 Sept. 8. -  
" Bird Teguliferina to Renfro.  
" Cowbird of Tennessee to Renfro.  
Visited Sunlight locality. Collected  
from 8:30 AM - 4 PM. Went on to Fort  
Worth.  
Addresses for exchanges to  
Renfro.

8.48 Sept. 9 Car serviced in morning  
Drove to Mt. Pleasant, Texas  
in afternoon.



(6)

0038

8.57 Sept. 10. - Drove from Mt. Pleasant, Texas to Jackson, Tenn.

5.18 Sept. 11. Drove from Jackson to Camden. Spent afternoon in gravel pit south of town. Not now in operation. Good fossiliferous white clay mostly washed away. Collecting not good.

2.45 Sept. 12. Spent morning at Steel Bridge over Big Sandy River about 11-12 miles north of Big Sandy. Collecting good but exposures small.

In afternoon went 1-1/4 miles upstream from Steel Bridge and collected Birdsong shale in bluff on east side of river.

Sept. 13. -

3.30 Sent Eugene Love, Rte 2, Holladay Tennessee, a copy of Dunbar on Devonian of Tennessee. Sent 10/5/40

Collected at Will Love farm. Collecting poor except for small things. Place much visited!

Farm is located on east side of Tenn. 69 just 10 1/2 miles S of junction of Tenn. 69 + U.S. 70. Locality is just about four miles N of the center of Holladay.

2.67 Sept. 14. Left Camden and went to Jeanette. Found no exposures SE of this place. Local people asked knew of none. Silurian limestone (Decatur) is exposed 1 1/2 miles NE + about the same distance SW of the village.

6. Took quarters in Parsons. Drove from Perryville to Decaturville and back to Parsons. Sent off a box + keg of fossils.



(7)

0039

246

Sept. 15-

1.00

Bobs Landing road off Hg 69 and NE or east about 4.3 miles. Road to Landing opposite store selling from Jan J. K. May's store. It is 7.8 miles from main street of Decaturville down to road leading to Bobs Landing from 69.

Went to Bobs Landing. Collecting in brachiopod beds can be had from a glade just west of northernmost part of Tennessee River bluff  $\frac{1}{2}$  mile N. of Bobs Landing. Found better collecting about 0.2 mile NW (of words Bobs Landing on map) of Bobs Landing and about 200 yards east of northernmost house between a small creek (dry) and a fence line. An old road crosses the glade. Brachiopods were abundant and good.

An old man took me to a glade in Beech River about 1 mile WNW of Bobs Landing. Bluish limestone and calcareous shale probably 30' in all containing *Astracypora*, occasional *Troostocrinus* and *Lamplinites*. Brachiopods were rare and in general poor. 1 picture, no 1 on 35 film - poor.

Sept. 16 - Visited Browns port Furnace.

Go from Decaturville to Vise town which is approximately summit of the TVA sheet 32 SW. about 1 mile by road from Vise town bend the old Furnace road goes right to the old furnace site. The old brick hotel is still standing. Glade on south slope of hill just NW of hotel building. Exposes Bob + Lobelville. Former richly fossiliferous at base. Lobelville abounds in bryozoans. Failed to find the Beech River sequence although Dixon is exposed in hill



to SW of Furnace.

In afternoon visited Blue Mound Glade which can be reached 1 1/2 miles to west of hotel and then take indistinct road going west from sharp angle in old Furnace road. Follow old road for 730 paces bearing left at both forks. Take left bend at fence + cross creek; glade is up hill from creek. Collecting excellent and horizon is same as that in base of exposed section in hill NW of Furnace.

Sept. 17-

Revisited Blue Mound glade and relocated it as 730 paces almost due west of angle of road or 600 yards (0.3 mi). Collecting excellent and found over 100 Lysidula roemeri.

Visited glade about 0.2-3 mi. north to NNE of right-angle bend of county road about one mile west of bend at Visetown. Lower 15-25' of Beech River exposed. Collecting poor. Dixon at base of glade.

Collected for 2 hours at glade just S of Mt. Lebanon school. Fossils abundant but poor. At intersection of county road and old road Dixon is well exposed. Collecting was in lower 15-20' of Beech River division.

Sept 18 - At intersection of Brownsport Landing and Visetown road the Dixon is exposed in the road bed and to east of Visetown road. About 100 yds. east of Visetown road the Dixon is overlain by about 8' of shale & 6" limestone beds containing Pisidium and a few other fossils. A light gray clay on Dixon contains the small Crinoids but they also occur in shales above.

all (start at 2 of road)  
N 70W 25-1  
W 119  
S 55W 24 to Creek + 46  
S 80W 26 to center of glade  
3.25



Road from Mt. Lebanon School south to Mt. Lebanon Church exposes a good section of the Beech River but larger fossils are not abundant. The Devon is exposed at the angle at the school and a large glade exposes lower BR to south. The church rests on yellowish clays containing Unicrinus affinis, Gypidula roemeri which suggest the Lower Bob. About 75' north of church on each side of road a 3' ledge of ls contains Hastichlandi of the Lower Bob. This ls. forms the flat on which the Bob shale & the church rest.

Sept. 19 - Large glade S of Perryville is actually 1.5 miles by road from the Beech River Bridge and 1.8 miles from the old Perryville RR Sta. The glade is large but fossils are not numerous. Spent most of day on glade but did not get anything worthwhile.

Sept. 20 - Car service in morning. Went to Blue Mound Glade in afternoon. Section there is same as Basslers 2 b, c, for the glade NW of the Furnace. Developed motor trouble on way home. First of trip.

Sept. 21 - Searched vainly for the Graveyard Glade. No one seemed to have heard of it. Was led to Christian graves. Visited two glades approximately 1 1/2 miles W of Bob and one almost exactly 1 1/2 miles west. Two of these glades proved to be in the Washington beds of the Bob.



Sept. 22 - Mrs. Duck, manager of hotel claimed to know a good collecting place at Decaturville and took me there on Sunday. Place proved a dud. Went back to Mt. Lebanon School locality for 3 hours collecting. Some young men said the place is much visited. The scarcity of larger fossils rather bore out their remarks.

0.60

Sept. 23 - Moved over to Linden in morning. Had a look at the section at the Pine mill. Exposes nearly a hundred feet of Silurian capped by Hardin ls. On SE slope of hill SSE of mill found glady slopes with a few brachiopods, Bryozoa and many Rivoceras. The bryozoan beds of the Lobelville. Found several specimens of Calceola.

18.00

In afternoon collected coral beds of Lobelville about 0.15 mile upstream from junction of Jack Branch and Short Creek on road opposite house. Corals fairly abundant.

Sept. 24 - Gilmore bridge about one mile NNE of Lobelville. On SE side of road new cuts expose bryozoan beds of Lobelville with Gyrodonta and fine-lined Ataypa. Possibly these beds are lower part of coral bed. Above these in woods above the bridge for one tenth mile small corals can be found in the soil but the whole slope is thickly covered with leaves and brush.

At crossing of road and Harris Branch bluish gray limestone is exposed. About 5' above water a thin layer with Conchidium was found. Above this



layer. The rocks are shaly and contain corals both cup & tabulate which suggest Lobelville. My guess is that the Conchidium belongs to the Lobelville.

0.95 Visited spring in bluff about 0.6 miles NNW of town. Section is in bluff, about 25' exposed. Downstream occurs coral bed with Conchidium, locality mentioned above.

Just north of west bridgehead at junction of Tenn. 13 and 50 shales rotted down to clay contain corals and bryozoa, undoubtedly belonging to the Bryozoan zone of the Lobelville.

The Conchidium collected at Lobelville belong high in the coral zone.

At 1 P.M. it started to rain in earnest and I went home.

Sept. 25 - In morning packed three kegs and then took them to Hohenwald where I shipped them to the Museum. In afternoon went back to Beardstown along river north of bridge on Tenn. 50. Here 21 feet above river level and about 1/4 mile N of bridge found Rhipidium knappi concretion in a thin zone. Below it occurred U. sticklandi, Rypidula, W. saffordi and a few other brachiopods which suggest the Bob. I saw no beds that suggested Beech River.

Left Beardstown and went to mouth of Jack Branch. No corals occur there but are abundant about 0.2 mile upstream.

Visited small quarry (about 30') 0.7 mile east of junction of Tenn 13 and 20 on N side of latter. Quarry is mainly heavy bedded ls., light blue gray in color. Near top is a



shaly zone about 3' thick containing brachiopods suggesting the Bob. As the Bob red zone is exposed on a small bench above the null I imagine this quarry is in Decatur limestone. I am wondering if, Lobbville, Decatur and Bob are one & the same thing having lateral shaly facies and coral facies

133

Sept. 26 - Bluff at Mousetail

0.95

A - Dixon exposed at S end of bluff at turn by old storehouse and occupied house.

B. 55' mostly limestone crumbling to small fragments (shale). In lower 15' some phosporines and small hemispherical corals. At 21' found Plectatrypa. Limestone beds up to a foot thick form occasional ledges. At 55' comes heavy-bedded gray ls.

14-15' D

Bryozoan zone?

C. - About 25' of massive limestone forming a bench. This is probably Basalens Eucalyptacrinus zone.

25' ±

like it lithologically

D - purplish shaly weathering limestone alternating with greenish shaly limestone and with harder layers that form ledges. 14'-15'. Most of corals seen weathered and lying on slopes were derived from this layer. Found Rhipidium here also

55'

E - Hard massive limestone to top of hill and forming a flat top. Limestone is cherty and contains many crinoid stems. Decatur ls?

Dixon A



## Section at Lady's Bluff

Started section about 100 yds N of house at S. end of bluff.

A - Light blue gray shaly ls. Between 18 + 21' above river level saw *U. sticklandi*. This is unusual for Beech River. About 42' of shaly ls.

B - Harder, nodular gray limestone, 5-15' Light gray with brachiopods.

C - Partly covered but mostly of grayish green ls, somewhat shaly 16'

Linden?

D - Shaly ls. containing brachiopods & *U. affinis*, *Galymene*, *Dypidula*

E - Purplish and greenish shaly ls. Contains corals. Probably should not be separated from D.

60±

F - Decatur, 60'±.

G - Linden ls. ? Entire top of hill covered with chert. Saw no evidence of shale although it may have existed here.

15'±

8'

D. Top of hill goes about 20' above top of Decatur making hill about 175' above present river level.

16'

C

5-15'

*Uncinulus*?

The section given here was taken mainly at the point putting into the river on the north side of a small creek that comes into the river. South of this creek the section is somewhat different. The so-called *Uncinulus* bed is either more weathered or not so thick as to the north. My mention of *U. sticklandi* in Beech R. may bear this out. Found *Conidium* in red-green shaly zone same as at

30-

42'



monstail. This section seems to me to be about the same as the Monstail one, a little thicker because of the complete section of the Decatur and more of the shaly zone with the red beds. Saw corals in lower Decatur which may indicate presence of the coral zone.

Sept. 27 - by side of road opposite house,  $1\frac{1}{4}$  miles (airline) SSE of Pine View, up Walsdorf Branch, about 0.7 mile S of Tom's Creek, Perry County, are 3-4 feet of shale yielding many corals like those exposed on Jack Branch.

$\frac{1}{4}$  mile NE of bridge over Coon Creek on Tenn. 100 is good exposure of brachiopod bed sandwiched between two layers of heavy-bedded ls. The shale bed with brach. is about 2' thick. This same brachiopod bed seen in Ay on Hy 20.

The brachiopod bed in the Ay on Tenn. Hy. 20 is about 20' below the Hardin ss and the ss lies in place about 8' above the top of the Ay. There must be either much erosion at the top of the Silurian or unsuspected facies changes.

Intersection of Coon Creek and Hy. 100 is probably Foerste's locality for *Anchidium lindnerensis*. I hand-levelled down from Hardin ss. about 70 feet but rock is covered at level of *Anchidium*. Possibly if there were a ford at the Creek pit Foerste's more rock was showing then.

Sept. 28 - Peeler's Pond a great spring issuing from the high bluff. Rock for about 3' at spring is red but above that is mostly greenish or bluish. According to a man met on



3.30

The road the highway formerly went along the base of the bluff. Now the highway runs about 18 feet above the level of the pond. The bluff was blasted to get the fill for road. About 10' above the road is a 3' shaly bed containing Strombodes. 1/4 mile south of the Pond (where spring issues) on east side of road scraping of bench has revealed a shaly coral & bryozoan bed which is between the Strombodes bed and the red bed at the base of the sequence. The spring is located about 600 paces south of Peckers Hollow.

South side of crossing of Cane Creek by Tenn. Hy. 50 and for 0.1 mile upstream are 15' of coral beds at base of section. Over these are some 38' of heavy-bedded limestone and over this is the Lunden with Camaroceras.

12.75

Sept. 29 - Visited Pegram on Mill Creek. Spent most of day there.

Good section of Silurian but poor in fossils along the road (Tenn. 13) beside Buffalo River about 1 mile NW of Flatwoods. The whole section appeared to be most Beech River.

In late afternoon stopped to see Natural Bridge on way to Waynesboro.

0.40

Sept. 30 - Spent day at Clifton and vicinity. In morning went ENE of town to point where road bend ESE. Along the river bank at this point the Fernvale formation is well exposed and can be followed NE along the river to a conspicuous bluff a few tenths of a mile from the bend in the road. At the bluff the rock has been quarried or at any rate is fresh. The shaly part of the Fernvale is bright greenish



blue. Fossils occurred about one foot below the top. The thin Brassfield is exposed well along the shore here. This is followed by the red Osage shaley limestone and the top of the bluff by the pinkish Laurel ls.

After seeing this section walked west from old Cement Mill along the bank of the river. The section is covered where Mud Branch enters the river but a short distance west the top of the Laurel appears and scattered blocks of Waldron with Plectambonites tennesseensis, Stephanocrinus and other fossils. Then follows the Laurel and the Dixon and finally the Beech River forming most of the bluff west of Clifton. This is the west limb of an anticline the center or axis of which is near the point where the power line crosses the river. Going east of the power line the Hermitage forms the bank for a long distance, nearly to the hotel. This is overlain by Anheist and the Germvale which is exposed below the hotel and at the Ferry landing. Farther east the Silurian sequence is repeated on the east limb of the anticline.

Made a good collection of inarticulate brachiopods from the Hermitage.

Oct. 1 - Martins Mills in morning. Hill just south of the cluster of houses exposes an excellent section with Beech River at base and top with Gant ls. on top. Gant limestone comes to road level perhaps a half mile S of the mills. Hillside N-NE of mills showed Beech River at base and Hardin about middle of hill. Forester's section is undoubtedly up the small stream, although he speaks of being 57' above the road.



Good section of Beech River with fossils in hill a mile north of the mills. collected here. Several small crinoids are common with an occasional *Trochoceras*.

Just SW of schoolhouse one mile west of Houston the rocks have been blasted out for the road. Just NE of the school is about 10 feet of massive limestone abounding in brachiopods, which is overlain by the Hardin. The fill of blasted material unfortunately has either been picked or is not very fossiliferous.

Oct. 2 - Went up to Short Creek north of Lego school. Thought it hopeless to try and find Forster's locality for *Conchidium*. Went up old road north of Short Creek and found a glade showing about lower 5' of Beech River and its contact with the Dixon. The whitish clay at base of Beech River was well exposed but I had few fossils. Above Beech River exposures are poor but upper 35' of Silurian is exposed below the Hardin. It is massive heavy-bedded x-line ls.

Visited Miser's locality 1/2 mile opposite Lego. This was exactly like the one above. Fossils can be cracked out of the x-line ls.

Went 1/2 mile N of Whiteoak School corners to Miser *Conchidium* ledge. Opposite first house on West side of road just 1/2 mile north of the corners at the school an old road goes east into the woods. This road goes over rotten x-line ls and shaly beds abounding in corals and bryozoa. About 100 yards from auto road old road branches, one branch going to the NE (left) up the hill. This branch of the road crosses the *Conchidium* ledge which may be followed to the NW around the hill for some distance. I make



the ledge about 8-10 feet thick on the front of the hill facing west and it is about 22-25' below the Hardin ss. Above the *Conchidium* corals are also fairly common and an occasional coral may be found with *Conchidium*. I think the *Conchidium* belongs with the corals. The few brachiopods present are like *Lobelville* or *Bob* types. Found one *U. tennesseensis*. I have a suspicion that *Bob* = *Lobelville*.

Oct. 3 - Beside the road on the north side of the entrance to the Jewell Spring and about road level a layer of earth, yellow-weathering ls. contains large *Conchidium*. Went up hill to north of Jewell (the white) house. At base of hill is shaly material with corals, but nearly entire remainder of section is crystalline ls. right up to the Hardin ss.

1.66

After lunch Mr. Jewell took me to a glade along an old road about 1/2 mile SSW of the Jewell house. Corals are exactly like those under *Conchidium* ledge. *Conchidium* was present here but rare. At this place shale of Beechwood type is interbedded with ls. Presence of *Favosites* &

Oct. 4 - In morning collected from glade slope on U.S. 64, 6.8 miles east of Savannah. Got good *Bob* brachiopods and a whole *Calymene*.

At noon collected at a glade 3.85 miles east of Savannah. Suspect glade is Rockhouse shale. The shale 10' + occurred over a few feet of hard limestone showing in a ditch east of glade.

On Indian Creek went along bluff facing Olive Hill. Saw



Lobelville, Decatur, Ross, Bear Branch and Pyburn.

In evening found glade 100 yds N of US 64 and 0.6 miles SW of Wayne-Hardin County line. Here purplish shaly ls. contained abundance of *Astracospongia*, *Calceola* and a few other Beech River types.

20.28 Oct. 5 - Left Waynesboro 9:45 and arrived Murphreesboro about 2:15. Met Jo at about 4:45.

6.40 Oct. 6 - Went from Murphreesboro to Nashville. Visited two localities of Pegram given by Peoples. Hamilton part of Pegram is thin and sandy. Onondaga part is granular, x-line ls. Part seems to be pre-Tropidoleptus and probably definitely of Onondaga (upper) age. Spent rest of day collecting Waldron and Onondagian.

1.34 Oct. 7 - Went to Vanderbilt to see C. W. Wilson at Vanderbilt. Spent 2 hours with Born & Pond of Tennessee Survey. Saw Wilson at Vanderbilt. Saw Pohl & Peoples collection of Pegram. Specimens labelled as *Sp. gogarium* are not that species. One looks like a *Aetideolina* and the other a small *Spirifer*. Saw no unequivocal Onondaga species in the whole collection.

Wilson had fine specimens of *Cryptophragmus* from the Lebanon.

Wilson had stonyish from Murphreesboro. " " collection from Sequatchie Valley containing *Fascifer*. He regards this horizon as Pierce. This horizon is high Otsego. The *Pinnodonta stenos* is a *Fascifer*.



Left Nashville about 1 PM and went on to Murphreesboro where we collected Murphreesboro fossils on the south side of Stones River, west of U.S. 41. Here the WPA is building an army and a great deal of dirt from the upper part has been known out. We made a large collection.

Oct. 8 - First stop was at bridge over Stones River about one mile southwest of Leacock on Tenn. 96. Here Murphreesboro lies in stream bed. Pierce comes over it on east side bridge and the Ridley overlies the Pierce. We collected 1.45 Murphreesboro and Pierce.

Next visit was to old Pierce Mill,  $\frac{1}{2}$  mile S of Walter Hill on Tenn. 10. There is a small exposure near power plant of thin ls. with bryozoans. Much of the material is without fossils and is quite vancouverian in character.

Visited Ridley on N side of road crossing Stones River a mile due east (airline) of Jefferson. Here near top of exposed sequence we found Protolophoceras.

Visited Niece's Mill where Pierce is well exposed. Here Protolophoceras occurs in the bryozoan beds near top. Over the Pierce we found Ridley Rhynchoceras in soil.

7.71 Oct. 9 - Spent morning at Marshall's Knobs on Ridley. This is more massive limestone than the Pierce but in general is very fine-grained brownish gray, but the weathering light ash. Well through the formation Rafinesquina like deltoides is abundant with a Strophomena. Protolophoceras occurs throughout the Ridley.



In afternoon took US 41, road to Manchester, found fresh cut in Lebanon and collected many fossils. *Rafinesquina* & *Strophomena* common with a *Rhynchotrema*.

7.71 Oct 10. - Took US 705 to Woodbury. Collected Lebanon, en route. At big bend of road just east (1/2 mile) of Readyville we collected *Cryptoshragmus* in Lebanon, had *Sowerbyella* in beds just above it.

0.4 miles  
E. of Lebanon

Afternoon collected Hemitage between 1 and 1 1/4 south of Woodbury on both sides of the road (Tenn. 53) to Manchester.

3.81 Oct. 11 - Ask Wilson for a squeeze of *Bathyrinus* from Murphreesboro; also one of the starfish.

Went to Shelbyville and Belfast to collect Lebanon. Poor success.

3.10 Oct. 12. - Packed and shipped 13 bags of fossils. Includes most of my Silurian and all the Ordovician we collected.

In afternoon collected Lebanon along Tenn 10 between Murphreesboro and Lebanon.



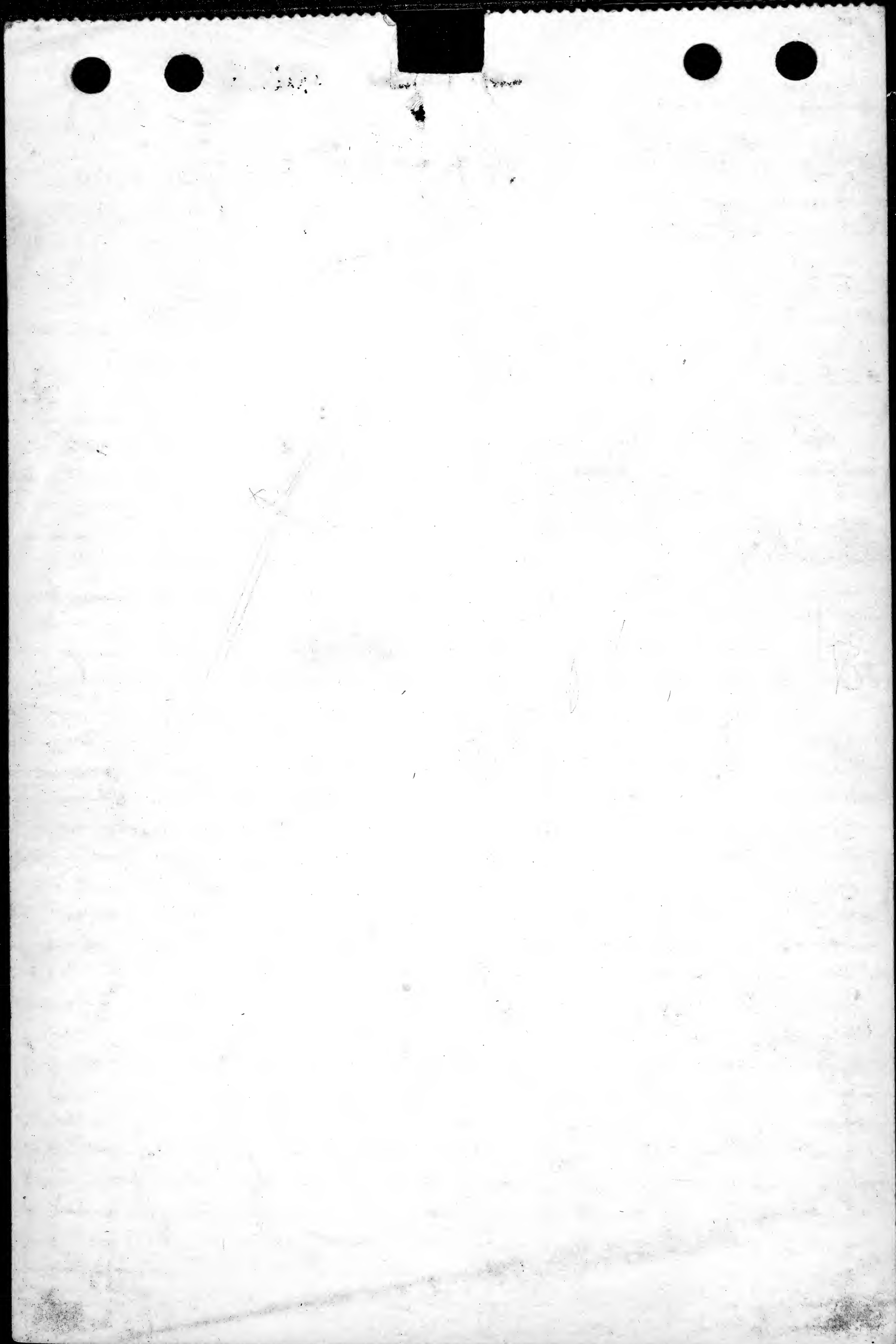
Oct 13 N 70 E 30° S taken on what we think is Lebanon about 18' below Trenton and 25 feet below Bentonite which is about 6" thick. I believe I have found *Pionodema minuscula* in top of Lowville 5.4 miles NE of courthouse in Maynardville on Tenn. 33.

13.89 at this locality shaley and limy. Martinsburg contains *Zelleria* fossils. *Dalmanella*, *Sowerbyella*, *Dinorthis*, *Rhynchotrema*. This is same bed as we collected in 1939 near Cumberland Gap. 25' below a thick Bentonite. In the Martinsburg we found *Pionodema minuscula* Willard and a sequence lithologically like Lebanon. This supports my view that the Lowville of the Appalachians is all or part of the Stones River of the Central Basin.

5.62 Oct. 14. - Collected 0 Horse fossils south of Evans Ferry. Drove from Jaxwell Tenn. - Salem, Va.

6.13 Oct. 15 Drove from Salem, Va to Washington, arriving at 2 P.M. Final mileage 28689







Sept. 29, 1940

Pegram on Mill Creek, N. of  
Topsy, Tennessee. TVA Topsy 17

Point out in paper if any of Pegram  
is really Onondaga. There must  
have been big interval between  
Lower Onondaga (Cauden) and Upper  
Onondaga Sp. acuminatus zone to  
have produced the Cauden and  
Clear Creek cherts, which generally  
are chert wherever known.

The Pegram on Buffalo River in bluff  
on west side of mouth of Mill Creek  
north of Topsy is about 6' thick  
of hard light to dark gray crystalline  
limestone, irregularly bedded in layers  
from one to two inches up to nearly a  
foot. Contains many strobilites. Basal  
layer in bottom few inches contains  
concretions and a green mineral  
probably glauconite. Fossils are  
scattered throughout. Saw nothing  
while collecting to indicate anything  
of Onondaga age. In basal bed  
occurs Favosites, Turbinatus suggestive  
of Beechwood with a large wrinkled  
Schuchertella. In middle of formation  
saw possible Vitulina (or dorsals of  
Cyrtina). Near top Cypricardina is  
common. All fossils seen suggest  
a Hamilton age for whole layer  
rather than any Onondaga.

Sp. gregarius is only real Onondaga  
fossil in Pegram reported by Peoples. It  
could be a Delaware form. In paper  
show Nucleornis vernanti also in  
Hamilton type. Pegram may all  
be Hamilton.

After examining my specimens



0056

Collected today I believe I do have  
Vitulina and they come from about  
the middle of the formation. This  
I think makes the presence of any  
Onondaga very doubtful.

Look for collections Miser may  
have made

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See Jewell in Hardin Co Report  
Rods may = Pyburn



# Texas and Oklahoma 1941

June 10 - Left Washington, 7:45 AM with J. Bridge. Lunched in Roanoke, Va. Called on Harry Todd in Bluefield, Va. at 5 P.M. Arrived Fagerwell, Va. 6:30 P.M.

June 11 - Saw sections around Fagerwell with B. N. Cooper, Butts & Bevan.

June 12 - same. Visited Burk's Garden.

June 13 - Went to Ceres in morning; collected at Porterfield Quarry in afternoon. Left J. at Bristol and went on to Morristown for night.

June 14 - Morristown to Memphis. Collected Lebanon 11 miles E of Lebanon. Found *Protolichne* in Lebanon. Collected Walden at Prison Quarry east of Pegram.

June 15 - Memphis - Mount Pleasant, Texas. Rain in Texas. All rivers very high.

June 16 - Arrived Fort Worth at noon. Jim Newell had already arrived. Called on Renfro in evening.

June 17 - Met R. H. King in morning. Went to Bridgeport & collected in shale pit there, then went on to Jacksboro and collected east of town.

June 18 - Collected Jacksboro east of Jacksboro. Then collected Gonzales shale 9 miles SE of Graham. Went over to Gansight & collected Wayland shale. Got several *Poikilosakos*.



2

June 19- Worked hill slopes  $\frac{1}{2}$  mile north of Union Hill School, 6 miles NW of Mineral Wells in morning. Collected from Millsap Lote formation about 8 miles SE of Mineral Wells where snails were abundant. Went back to Fort Worth with Ralph King and picked up Museum car. Went on to Jacksboro for the night.

June 20 - Collected at Gunter place from 7 A.M. nearly to 11 A.M. Got 7 sacks of fossils. Went on to Midland, Texas. Called on Bob King in evening for a few minutes.

June 21- Spent morning with Bob King and a short time with Ronald De Ford. We then went on to Fort Stockton where we called on J.M. Montgomery a ranchman for permission to go on his place. Reached Marathon for supper.

June 22 - Went up to Split Tank for the day. Collecting not as good as previously.

June 23 - Spent day at Split Tank.

June 24 - Spent day at Split Tank. Place not now so good.

June 25 - Collected Split Tank east of Fort Stockton road. Left about 3 P.M. Rain.

June 26 - Collected basal Word on slope north of Word Ranch. Took away most of concretionary mass of other years. Waagenoconcha is abundant in lower Word. The lower Word strongly suggests the upper Leonard at Split Tank. Rain in early afternoon. Packed two boxes



3 June 27 - Went to Wolfcamp hills and collected at locality found last year. This is definitely in the main mass of the Wolfcamp thick limestone and is about 15 feet below the top of that limestone. Made another collection here. Then collected from King's bed 9 which is exposed on the slopes south and west of the fork of the Canyon going into the Wolfcamp hills. Rained in afternoon.

June 28 - Worked all day in Wolfcamp Hills. Collected mainly from lower part of bed 9. Did not find some of the things reported by King. Thick limestones are chiefly reef masses, we think. Collected Uddenites zone on Wolfcamp front but found no good specimens of Parenteleles. Violent thunder storm at night.

June 29 - Collected in 3rd. ls. of Word north-northeast of Hess Ranch in Hess Canyon. Made enormous collection.

June 30 - Collected again in 2nd + 3rd ls. of Word. We found no satisfactory division between these limestones.

July 1 - Back to Hess Canyon to work on 4th ls. of Word. This proved to be so poor that we gave up and went back to the 3rd ls. Came in about four and packed boxes. 7th date.

July 2 - Collected south slope road Canyon about 1 1/2 miles west of east end. Fossils very scattered and collecting poor. Went over to Skinner Ranch for permission to go on their property. Rained out at 2 P.M.



4

July 3 - roamed the hills at junction of road and Billiland canyons. Fossils scattered. Collecting poor. Went over to Clay Slide. Saw few fossils. Rained out at 1 P.M.

July 4 - Looked over Wolfcamp suprounding sill about 3 miles north of Hess gate on road to Split Tank. Found few fossils. Collected Leonard from faulted block  $1\frac{1}{2}$  miles east of Hess gate and about 0.1 mile south of road. Got good Striatifera here. At noon went to town barbecue and rodeo.

July 5 - Collected Wolfcamp and Hess north of Decie Ranch in first spur of hills south of Cathedral Mtn.

Scacchinella common but sporadic in occurrence. Lives with beak down and growing to one another like Piththofenids. Made good collection from both Wolfcamp and Hess. The Scacchinella were taken in about middle of low hill and about 20'-30' below the top in fine-grained massive limestone. The Wolfcamp bed was somewhat above the middle of the slope.

July 6 - Worked over Leonard and Word north of Decie Ranch. Found the collecting poor, fossils very scattered. Went to Lenox to see Wolfcamp which is mostly a conglomerate. Went back and collected more Scacchinella north of Decie Ranch.

July 7 - Back to Split Tank for the day. Rained in afternoon but we stuck it out. Norman found 4 blocks with Uncinella and they occur just above the base of the Leonard, between the Hess and the beds containing Uncinuloides.



5- July 8- Spent day at Split Fork. Made a large and fine collection.

July 9- Spent morning between Split Fork and Word ranch. After lunch we got started collecting west of Word Ranch in Leonard when it rained. We came home and packed four boxes.

July 10.- Collected Leonard west of Ferdymakers place in vicinity of Old Word Ranch. Section mainly yellowish platy rock with fossiliferous ls. lenses. Uppermost lens contains many Aulosteges but they are hard to get. Collecting is good at bottom of formation. Packed three boxes in evening.

July 11- collected Word at Hess Canyon all day long. Good day, no rain. Packed two boxes before supper.

July 12- Went to hills north of Decie Ranch (King's loc 35) to collect Scacchinella. Had excellent success taking a number of large specimens from a single boulder.

July 13- Drove out to Leonard Mountain to collect Leonard ls. Collecting proved very poor so we went up to Word Ranch and collected until 3:30 when it started to rain. Packed two boxes in afternoon.

July 14- Back to hills with Scacchinella but we failed to find any first rate specimens. Collecting depends on finding a properly rotted block, not too rotten so that they crumble nor too fresh so that they crack through.



6 July 15 - Went to Wolfcamp hills. Most of our material comes from slopes formed by beds 3-9 or possibly 10. My material collected last year is from top of bed 2. Rained out about 3 P.M.

July 16 - spent morning collecting No 4 limestone of the Wolf about one mile north of Genstermaker's place. Collecting only fair. In afternoon collected Leonard at Word Ranch. Fair all day.

July 17 - Packed boxes and got them ready for shipment. Took Norman to Alpine to take bus. Dunbar delayed.

July 18 - sent off 13 boxes and 2 kegs. Sent 5 boxes to Wisconsin. Total for trip thus far 27 boxes and 2 kegs. Dunbar & Morris arrived 9:30 P.M.

July 19 - all day at Split Tank with COD and P.M.

July 20 - all day collecting Split Tank southeast of Split Tank

July 21 - Collected at Scacchiella locality (loc. 35 of R.E. King) until 3 P.M., then went to Alpine. Found few Scacchiella.

July 22 - Spent day at Hess Canyon collecting Word. Collected to No 4 at east end of Hess property at Split about 1/4 mile west of elbow in Canyon.

July 23 - Spent all day at Split Tank. Thunder storm came up about 2 P.M. Came home & packed boxes. Cooper has 2 more boxes ready.



7 July 24 - Wolfcamp hills till 2 P.M.  
When we were rained out. Most of our  
brachiopods are from 9-12 limestones.  
The fossils occur where the limestones  
are massive and reefy.

July 25 - Got run out of Wolfcamp by  
branch foreman. Went to collect Leonard  
at Word Ranch. Thunderstorm about 2 P.M.  
Finished packing.

July 26 - Packed up and shipped 3 boxes  
and four kegs. Got ready to leave Marathon

July 27 - Marathon to Cisco.

July 28 - Went to Ginnright, collected all  
morning. Went on to Fort Worth which I  
reached at 4 P.M. Called on Renfro that  
evening.

July 29 - Went with Renfro and collected  
lower Graham and Thifty north of  
Jacksboro. The first locality is on west  
side of Post Oak road three miles  
north of Jacksboro. The locality was  
good for several types of molluscs  
and a few brachiopods.

July 30 - 0.6 mile north of Finis, Texas  
and near fork of Byson - Bradford roads  
in top of Rangel limestone Teguliferina  
is abundant. In afternoon visited  
Gonzales Creek shale  $3\frac{1}{2}$  miles NW of  
Finis on road to Graham.

July 31 - Collected Lower Cretaceous around  
Fort Worth. Particularly after  
echinoids for exchange collections.



August 1 - Collected Graham west of Perrin in morning. Went to pit near Saltville in afternoon.

August 2 - Collected west of Fort Worth in Lower Graham in morning; same level north of Fort Worth in afternoon.

August 3 - Collected Hog Creek shale and Ranger in morning and in the Jackson level on the Ramsay place in the afternoon.

August 4 - Mostly bummed around Fort Worth. Wrote letters in morning, shopped in afternoon. Went out with Renfro in the evening. Mrs. R. wants an exchange of Michigan fossils.

Aug. 5

Darwin shale - E. side road,  $\frac{1}{2}$  mile south of Dexter, Cowley Co., Kansas.

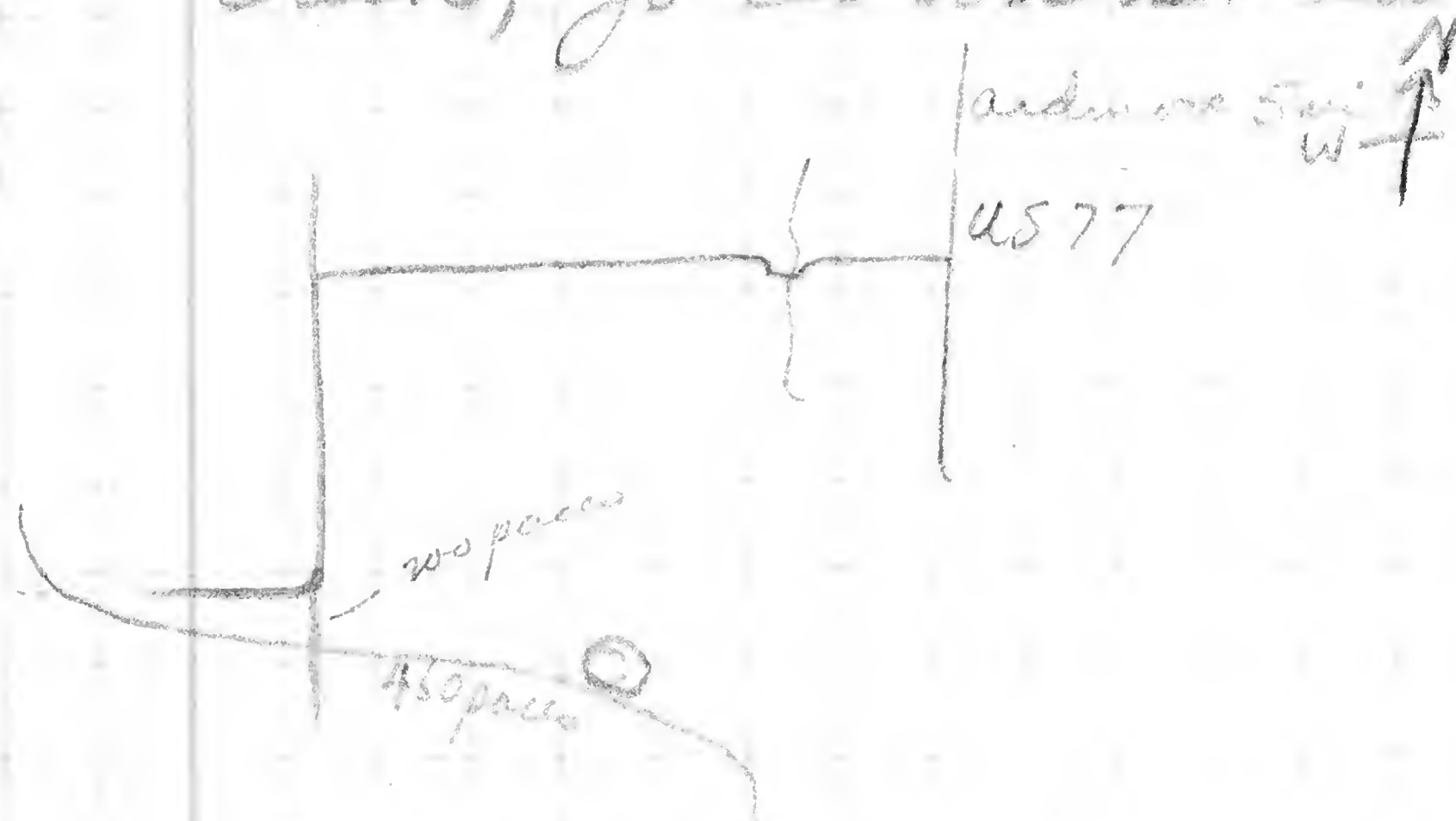
For excellent Mayes ls 16 mi. NE of Fort Gibson, Sec 17 or 18 - 15 N - 21 E,  $\frac{1}{2}$  mi. S of pavement on N side hill, ~~the~~ U.S. 62. Distance is probably nearer 10 miles. Left Fort Worth and went on to Norman, Oklahoma to visit with Dr. Decker and Dr. Dott. Called on C. L. Foster in evening.

Aug 6 - Back to Ardmore. Collected at Rock Crossing most of day. Collecting poor as rocks had been well washed by many rains.



9

Aug. 7 - Visited Bromide locality in sec. 26 in Cinner Hills. To get to this place go south of Ardmore about  $4\frac{1}{2}$  miles (measure from turn with traffic light on west edge of Ardmore) on US 77, turn west crossing Hickory in about a half mile and continue to west to road end. Turn south and go about 0.9 mile to sharp west bend. Old road continues south. Park and walk old road 500 feet (200 paces) to creek, go down stream 1150' (460 paces)



Spent afternoon on Bromide west of US 77. Found Sowerbyites zone at very base of section.

Aug. 8 - Went over to Sulphur and visited Ordovician locality on highway about 1.8 miles SSE of town. Rain rest of day. Packed four bags.

Aug. 9 - Spent day at White Mound. Collected in morning on slope  $\frac{1}{4}$  mile SE of the mound. Collected on mound all afternoon.

Aug. 10 - Went back to White Mound. Collected at cattle tank for 2 hours then worked along the hills  $\frac{1}{2}$  miles NW of White Mound. Fair collecting in upper Haragan. Went up to Ada between three and four o'clock!



10.

August 11 - Met C. G. Lelicker of Univ. of Oklahoma at 10 A.M. in Ada. Lelicker agreed to pilot me about the Stonewall Quad. for 5 days. We went first to collect Wetumka shale southeast of town and then Boggy farther south. Collecting was good.

Aug. 12 - Rain most of morning but we went north toward Holdenville to find some of Girty's Wewoka localities. All of them we visited were very poor collecting.

Aug. 13 - Made a try at Holdenville locality NE of town but it was much grassed over. Went back and collected at Wetumka locality SW of Ada.

Aug. 14 - Searched for two Boggy localities and a Wapanucka locality on Canyon Creek west of Jessie. Then visited a Haragan locality southwest of Jessie. This was very poor collecting. Went to collect Boggy E. SE of Ahloca. One small glade was very good.

Aug. 15 - Went back to glades ESE of Ahloca for our best collecting of the trip. Went to collect McAlester south of Fittstown then went to Cedar Hill for Henryhouse shale. Collected  $\frac{1}{2}$  mile west of Cedar Hill and on glades about in center of 10-2N-6E.

Aug. 16 - Packed 3 kegs in morning and shipped 7 kegs to Washington. Early afternoon went to brick pit south of city. Spent 2 hours here then went to quarry at Lawrence for a couple hours.

Bones sent in to Aug. 16.  
 9 boxes - 2555  
 13 " 12 kegs - 3850  
 5 " 1400  
 2 " 1113  
 7 " 410  
 9328 lbs.



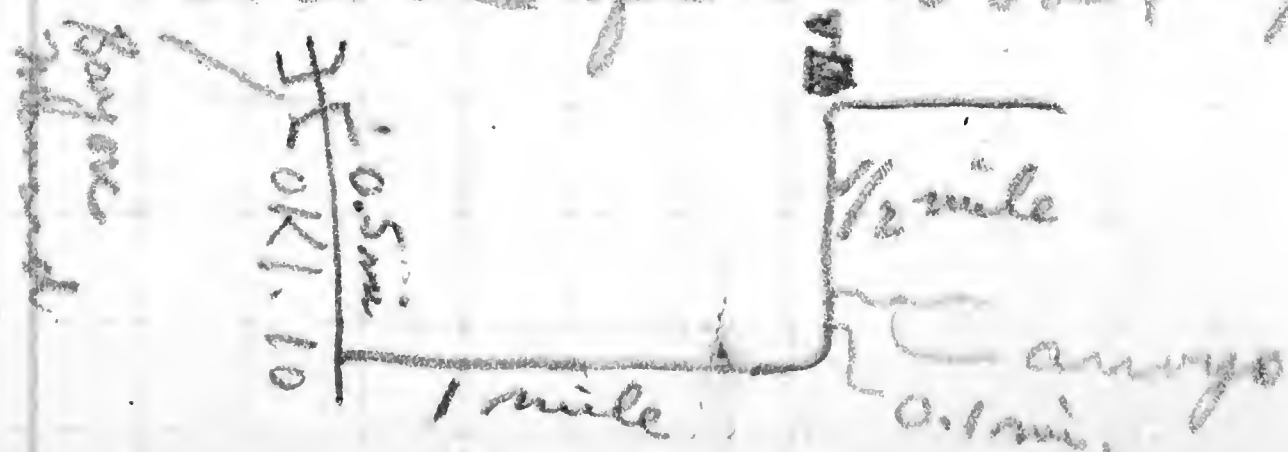
11.

Aug 17 - Collected Henryhouse shale in vicinity of Cedar Hill, 8 miles south of Ada. Locality is 2 miles east of Okla 99 in south half sec. 4 - 2N - 6E.

Aug. 18 - Went to Norman and picked up C. L. Foster, then went on to Muskogee. Collected Marginifera at a railroad cut in Dewar.

Aug. 19 - Collected Mayes ls east of Fort Gibson. Locality is reached by going east of Fort Gibson to Bayou Mandred crossing of U.S. 62. 0.8 mile east of the Bayou is a road going south that can be identified by two wooden bridges close together. Go south for 0.9 mile to bridge over large creek, go on to ford of brook and take the left fork of road, cross small wooden bridge go on taking right fork which after a mile from the ford crosses the Mayes ls. Collecting excellent

Aug. 20 - Visited Mayes locality at bluffs on south side Bayou Mandred on west side of Oklahoma 10. Collected here till lunch time. After lunch went to fields just 0.1 mile south of Glendale school. Here brachiopods were abundant. Just 0.1 mile north of bend in road about  $\frac{1}{2}$  mile south of the school X in an arroyo on the east side of the road about 100 yds to east Fayetteville fossils are abundant. To get to Glendale school go east on dirt road  $\frac{1}{2}$  mile south of Bayou Mandred bridge, go east one mile to bend, turn north for about  $\frac{1}{2}$  mile.





Aug. 21 - Rain in early morning. Collected Webster Falls on Verdigris River in morning. Visited Bacone college before lunch. Collected at Bayou Maumard and revisited localities one mile east of Oklahoma 10.

Aug. - 22 - Went back to locality 7-8 miles east and one mile south of Fort Gibson. Collected till noon-time. After lunch heavy rain drove us out. Went to Keough Co. north of Fort Gibson, 2 1/2 miles where it had not rained.

Aug - 23 - Went over to Okmulgee and collected at SW end of Lake Okmulgee and just west of Deep Fork west of the City. After lunch returned to Norman, to deliver Mr. Foster.

Aug 24 - Spent morning at Oklahoma Univ. with Sallicker. Had dinner with Mr. & Mrs. L. Then went to Arkansas City, Kans.

Aug. 25 - Collected all day north and south of Dexter, Kans. Derbyia was abundant in road cuts 3-3 1/2 miles NW of Dexter on Kans. 15 and on the same road in the S edge of the village.

Aug. 26 - Went to Fredonia but was refused admittance to the Quarry. Went back south to Carey and to locality north of Copan. Collected there all afternoon.

Aug. 27 - Left Independence. Accidentally discovered quarry in Checkerboard Limestone 1.8 mi. N of Lawapah, Okla. Collecting excellent!



Aug. 28 - Back to quarry north of Lenape for two hours. Then on to Nowata where I found nothing. Drove to Vinita. Collected Fayetteville north of US 60-66 about 5-6 miles east of Vinita.

Aug. 29 - Collected Fayetteville shale in bluff just south and west of Shawnee Creek in NE  $\frac{1}{4}$  11-25N & 21E all day. Collecting good particularly for large productids.

Aug. 30 - Collected 5 miles east of Vinita until 11 P.M. Then drove to Springfield, Missouri.

Aug. 31 - Springfield, Missouri to Henderson, Ky.

Sept. 1 - Drove to Corydon, visited Mr. Campbell for afternoon.

Sept. 2 - Corydon, Indiana - Parkersburg, West Virginia.

Sept. 3 - Parkersburg, W. Va - Washington, D.C.



✓ June 22.  
 Breakfast ✓ 0.20  
 Lunch ✓ 0.35  
 Supper ✓ 1.00  
 Visited locality 702 d and  
 spent day at it.

✓ June 23.  
 Out to mtn. front in morning  
 Thrown off. Came home & finished  
 packing because of rain.  
 Breakfast ✓ 0.80  
 Lunch ✓ 0.31  
 Supper ✓ 0.85  
 Gas 6.7 gals. (Marathon) ✓ 1.75

✓ June 24  
 Haul boxes ✓ 2.00  
 Telegram R.J. Stark ✓ 0.90  
 Breakfast ✓ 0.70  
 Lunch ✓ 0.50  
 Supper ✓ 1.05  
 Brought boxes to Station. Visited  
 702 e and 706 e.

✓ June 25  
 Freight 11 boxes, 6 blocks ✓ 110.80  
 Laundry ✓ 1.22  
 Breakfast ✓ 0.70  
 Lunch ✓ 0.40  
 Supper ✓ 0.90  
 Bags for packing ✓ 0.70  
 Gas 7.4 gals. (Marathon) ✓ 1.92  
 Lodging 8 nights. Marathon ✓ 24.00



0124

June 26

Breakfast

Lunch

~~Supper~~

Gas. San Angelo 12.1 gals. ✓ 2.78

✓ 1.10

✓ 0.95

✓ 1.10

Marathon to Cisco by 3 P.M.  
 Collected Putnam ls. fossils  
 2.3 miles W of Putnam on US 80.

June 27

Breakfast

Lunch

Supper

Gas. 8 gals.

✓ 0.60

✓ 0.40

✓ 1.20

✓ 1.84

Collected loc. 1.2 mi. S. of  
 Sanislt. in morning. In after-  
 noon went to Moran and  
 collected what seems from Plummer  
 + Moore map to be Moran fm.

1- 5 miles SE of Moran on US 283.

Small qy. & roadside cut. In  
 qy shale below ls contained fossils.  
 In rd cut shale above limestone  
 very fossiliferous. Limestone 6-10'  
 Thick

2- In field on S side of road  
 exposures above a tank. Same  
 ls. as qy.

3. Road cuts on east side road  
 11.7 mi. SE of Moran. Same  
 limestone as Quang?



Martin's lake S of Bridgeport

33.9

35.25 to Bank  
W from Bridgeport

1) 5.25 Bank in Bridgeport

2) Texas 24 Junction Lake Bridgeport  
5.9 Paved road

3) R. I. R. R. 6.2.

4) unpaved turnoff to Lake  
Bridgeport Dam

9.4

5) sponge locality 9.6.

Road cut on paved road

9.6  
5.25  

---

4.35

See Scott on Wise county for  
horizon at Martin's Lake. To find

excellent sponge locality leave bank  
in Bridgeport, go to Texas 24.  
Follow 24 to turn-off to Lake  
Bridgeport. This is a paved road. Follow  
this to junction of paved road with  
unpaved road to Bridgeport Lake  
Dam. 0.2 mile west of this junction  
is road-cut with sponges part  
way up hill. This is 4.35 miles from  
bank in a NW direction.



June 28  
Breakfast

✓ 0.70

nails

0.10

Lunch

✓ 0.60

Moore's loc. 88.9 is 5 miles E  
of Cisco on US 80 and 860 paces  
W of Hy. Old road mention by  
Moore turns N about 100 yds  
west of broad bend in US 80  
5 mi. W. of Cisco. opposite  
entrance to house on S.  
Old road is 4.8 miles W of  
Eastland courthouse

Supper

✓ 1.30

Hotel Cisco 2 nights, call

✓ 6.55

Freight 1 box Fort Worth

✓ 7.65

June 29 -

Breakfast

0.75

Gas Bridgeport, Texas

✓ 2.63

Room Fort Worth 7 nights

✓ 28.00

Send R. J. Starks Permian pictures.

~~Supper~~ Supper at Starks

~~1.30~~

June 30.

Breakfast

0.75

Supper

1.35

July 1 -

Breakfast

0.75

Supper

0.65



July 2 -

Breakfast

0.80

Supper

1.35

Collected in quarry W of Lakeville

July 3 -

Breakfast

0.80

Supper

1.25

Tacks

0.06

Potato Hill, + Post Burger 6 mi W of  
Duckstore.

July 4 -

Breakfast

1.00

Supper

2.00

E &amp; W of junction Texas 199 + US 281

July 5 -

Breakfast

✓ 1.00

Gas 4 gallons

✓ 0.88

Freight 2 bags, 1 box

✓ 12.50

Lunch

✓ 0.67

Supper

✓ 1.37

Fort Worth to Sulphur, Okla  
Visited White Mounds

July 6

Breakfast

✓ 0.77

Lunch

✓ 0.70

Supper

✓ 1.07

Syntrophopsis bed 160' below  
top of Arbuckle, SW 1/4 NW 1/4 NW 1/4  
22-15-1E, Murray Co., Okla  
bed crosses ~~near~~ W line of  
section 900' S of the NW corner

N. gen - Ham loc F93

Send Bill Ham copy of  
Brachiopod ecology



0128

J=15' 2nd dam at Spring Creek

I=60

H=15 1/2

G=18'

F=23'

E=30'

D=35'

Platygypta C=11'

B #33'

A  
20'covered  
shale

90

SS

coarse calcarenite upper surface  
forming north wall of gorge just  
below (east of dam). Saw large  
Oxyplecia on upper surface.  
Hebertorthis? 20'±. Camptelthis?



B- greenish dark fissile shaly breaking down into thin flakes at very base *Encrinurus*, *Oxoplocia* common.

C. C<sup>1</sup>- nodular, yellow weathering ls. with many bryozoa ca 30"  
 C<sup>2</sup>- crumbly sh with several thin nodular lines as below  
 C<sup>3</sup> Fine *Campylorthis*, numerous *Sowerbyella*, rare *Glyptorthis*, *Fascifera*, *Platycystites*. We can call this *Platycystites* zone thickness ca 7'  
 C<sup>3</sup> - bryozoan shale. upper bed of C<sup>2</sup> about 6" yellowish ls. thickness 15".

Top of C<sup>2</sup> and C<sup>3</sup> contain the coarse-ribbed *Multicostella* seen in green shale at base of section in Ciner Hills.

I think Division C is the same as the small collapse cut. about a mile S of Sulphur on Okla. 18.

D- D<sup>1</sup>- 3 1/2 - 4' of cobbly, crumbly ls. with large *Opikina* but small *Strophomena*. like basal Ciner.

D<sup>2</sup>- 31' alternating thin ls. (about 2") and thin shale beds (up to 6") with *Isotelus* (*Homotelus*?) and *Simulacra* in bottom, with big *Opikina* and *Oxoplocia* abundant at top, *Fascifera*



- E - E' - 9' Thin-bedded ls at base mostly thin-bedded ls (2" - 4") with shalier zone at top upper part with many square *Opikina* & some *Fascifera*. Base of F on 5 bump 2nd arroyo.
- F - Light to dark gray weathering in beds 4-6" thick. Large *Strophomena* *Opikina*. *Strophomena* abundant at top forming black lines because vertical to bedding. Top of F at edge of 3rd arroyo. NW edge of main dam.
- G - Thin bedded ls, little shale in lower beds (2" - 4" thick). Yellow brown *Canarocladia*-like forms. Fossils abundant in section. *Sowerbyella* in swarms. Top is long dip slope in outlet arroyo from main dam.
- H - Thin-bedded ls & shale abounding in *Sowerbyella*, *Heperosthis* & small *Campylorthis*.
- I - Thin-bedded elastic ls. containing brachiopods & countless bryozoa. Ls often composed of brachis or bryozoa. Large *Strophomena*. Squarish *Opikina*. *Sowerbyella*, plump *Opikina*. *Campylorthis*, *Oxoplectra* horses. Lower half smooth ls., upper half detrital ls. Lower half with brachiopod coquina. 60'
- J - Brownish dense massive dark gray weathering ls., brownish gray ls. forms N slope outlet of main dam.



In section 1/4 mile W of  
 hy 77 The *Sowerbyites* occurs in  
 The upper 10' of Deekers division  
 23 - just under a sandy ls.  
 Deekers beds 23, 22 and possibly  
 21, I think, correlated with the  
 shales on Spring Creek.

July 8

Offn

18'

M

30'

L

Section on US 99  
 all thicknesses questimates

A = limestone calcarenite

8'

K

of *Byozoa* & cystid stems often sandy  
*Hesperorthis*, *Mimella*, large *Opikina*

3'

J

B = shale with *Valcourea*,

3'

I

*Hesperorthis*.

Covered

C = calcarenite *Tribolite* fragments

D = shale 2' *Byozoa*, *Mimella*

*Hesperorthis*

25'

H

E = yellow-weathering thin bedded  
 ls. 8'

22'

G

F = yellow porous ls. 40'

top 26' thin bedded blue but  
 weathering yellow often shaly

40'

F

G = *byozoa* bed consisting

Covered { 30'±?

of 4 parts: 4' of *byozoa*

*Opikina* with *Mimella* a;

nodular ls 3' of crin

lithology with abundant

*Opikina*. Thin bedded ls. 5'

platy ls. 1' + shale 10'

rough sandy appearing

brown weathering

platy yellow white

weathering sandy ls 10'

8'

E

2'

D

3'

C

7' B

B

25' ±

A

+25' to

Bridge of Melish



H. Blue massive, thick bed  
ls. dipping to plates, contains  
beds of calcarenite and most of  
top of calcarenite 25'

I - light gray ls. 3'

J - calcarenite, shaly at base 3'

K - shaly & thin bedded ls. beds  
up to 6" 8' contains one  
3" bed of crinoid like lithology  
at top fossils poor.

L - mostly calcarenite 30' heavy bedded

M - shaly ls. massive 1' bed  
at base, shaly & massive ls.  
with thin beds of mealy light  
gray ls. & in a thin 8" mealy  
bed 3' below top & just under  
a 1' massive light gray bed  
Crinoid or synchro is abundant



July 7  
 Breakfast  
 Lunch  
 Shirts  
 Supper  
 Went to Spring Creek

1.00  
 0.74  
 2.25  
 1.22

July 8  
 Breakfast  
 Lunch  
 Supper

0.87  
 0.43  
 1.32

July 9  
 Breakfast  
 Lunch  
 Supper

0.87  
 0.77  
 1.07

Log for Pennsylvanian fossils

16.95  
 18.1 Road intersection  
 19.15 blind intersection, turn SE  
 19.5 Washita River  
 20.8 turn S.  
 21.5 " E  
 23.5 Washita River  
 26.9 Mill Creek  
 28.3 Okla. 12  
 30.7 center of Ravia

July 10.

Breakfast  
 Lunch  
 Supper  
 Laundry

1.02

✓ 1.25



July 9.

Myers

4 miles east of Hynepin  
 1000' due east of ~~the~~ house  
 Center SW  $\frac{1}{4}$  2 - 15 - 1W. Locality  
 for *Diparylasma typicum*.  
 Probably topotypes. Rocks  
 much distorted. I think possibly  
 algal reefs. Only place here and  
 just outside corral that we  
 saw these fossils. About 0.15  
 mile on strike of beds from corral.  
 All blocks marked here.

## Mountain Lake

E  $\frac{1}{2}$  22 - 25 - 1W, Carter Co.  
 Near dam on edge of lake, southwest  
 side about 12' under upper edge  
 of *Brunia* with *Receptaculites* occur  
*Rosticellula*, *Strophomena*, a and  
*Bygonia* suggesting *Cruce*. At west  
 end of lake and along shore  
 to SE for some 200 yds occur  
 green sh with *Multicostella* +  
*Platycystites*, same bed as Spring  
 Creek.



Spring Creek revisited

Basal bed 55 - T. B.

Paced section = 118'

1 = Brownie sand

2A = 25-30' probably shale but also thin bedded ls.

2B = Sowerbyites bed - 2 1/2' shale & thin-bedded ls. with Sowerbyites, Minnella, large Opikina

2C - brown ls. 3'

A 2D - green shale with small Valcourea - 17'

42' 2E - ls. 2' Small Multicostella placed in sack with 2D.

16' 2F - mostly green shale with thin wavy ls. Middle 5' abundant in stude-like bygonia

2' 2E

Valcourea 2' 2D

3' 2C

21' 2B

25' 2A

2G - 4' heavy ls. at base shale with nodules of lime 8' followed by 2' ls. Following is 2' of shale. Remainder covered, probably shale

A = calcarenite 15'-20' corresponding to previous section.



Notes

Trip to SW with

E. Yochelson

May 31 - July 31

1947



0114

✓ May 22

Purchase \$700 in Travellers cheques

✓ 5.25

Cheque nos. A50,792,504-A50,792,538=10

B43,545,322-B43,545,341=20

✓ May 28 - 14 gals. gas, Washington, DC. ✓ 3.24

May 31 - Lexington, Va 12 gals., oil ✓ 3.46

Abingdon Va 9 3/4 " ✓ 2.45

Lunch, Lexington, Va ✓ 0.50

Supper, Morristown, Tenn ✓ 0.90

Morristown overnight

✓ June 1 Breakfast, Morristown ✓ 0.50

Room, Morristown, Tenn ✓ 3.00

Gas Rockwood, Tenn. 12.4 ✓ 3.48

Gas Wayneboro, Tenn 13.5 ✓ 3.73

Lunch Murfreesboro ✓ 0.46

Supper Memphis ✓ 0.50

Room, Memphis, Tenn ✓ 4.00

Service car ✓ 4.96

Memphis overnight

✓ June 2

Gas Little Rock 9.8 ✓ 2.65

Breakfast Memphis ✓ 0.61

Lunch Arkadelphia ✓ 0.46

Supper Dallas ✓ 0.90

Gas, Texarkana 5.6 ✓ 1.40

Room Dallas, Texas ✓ 4.00

Dallas overnight

✓ June 3

Breakfast + Lunch ✓ 0.65

Gas Fort Worth 13.4 ✓ 0.54

Gas + oil Anson, Texas 9.8 ✓ 3.07

Phone call ✓ 2.69

Gas Hobbs 10 ✓ 0.90

Arrived Carlsbad 5:30 P.M. ✓ 2.64

✓ June 4

Gas 11.4 oil Mayhill ✓ 3.30

Lunch Alamogordo ✓ 0.97

Supper ✓ 1.10

36.43



✓ June 4 cont'd  
 Lodging 4 nights Alamogordo ✓14.00  
 Left Calabed 8:00 A.M., arrived  
 Alamogordo at 11:30 A.M.

Afternoon collected Sly Gap  
 and Calallero in Canyon 3 miles  
 due east of school for blind on  
 N edge of Alamogordo. Road goes  
 due east to mouth of canyon.

✓ June 5  
 Breakfast ✓0.70  
 Supper ✓1.00

Collected Devonian and Mississippian  
 on saddle between Marble Canyon  
 and first branch south.

✓ June 6  
 Breakfast ✓0.95  
 Lunch ✓0.90  
 Supper ✓1.10  
 Unsuccessful attempt to get to Capitol Peak

✓ June 7  
 Grease car, repair motor ✓7.05  
 Breakfast ✓0.75  
 Lunch ✓0.71  
 Supper ✓1.10

Went over to Sly Gap.

✓ June 8  
 Breakfast ✓0.71  
 Gas Darning, N. Mex. ✓2.43  
 Lunch ✓0.71  
 Supper ✓1.71



June 9

Breakfast  
 Tire repair  
 Lunch  
 Water bag  
 Supper

✓ 0.72  
 ✓ 0.61  
 ✓ 0.72  
 ✓ 1.79  
 ✓ 1.27

Spent day 4 miles east of Santa Rita and  $\frac{1}{4}$  to  $\frac{3}{4}$  mile N of road. Exposures north of ones collected in 1946 have few fossils.

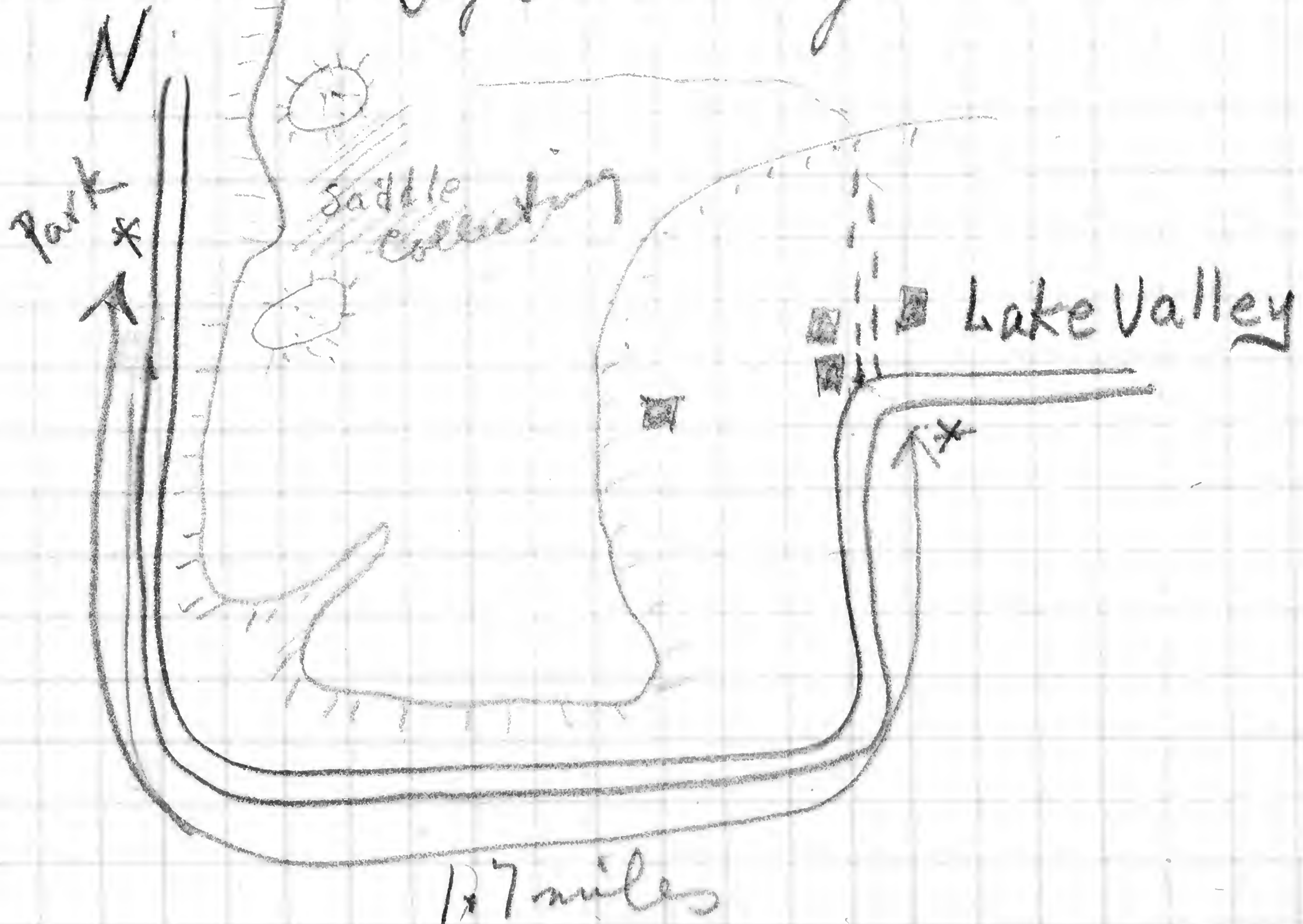
June 10

Breakfast  
 Gas 10.2 Silver City  
 Lunch  
 Supper

0.66  
 ✓ 2.81  
 0.47  
 1.70

93

Lake Valley - locality 1.7 miles by road N of Lake Valley.



H. 22



✓ June 11.

Breakfast

✓ 0.71

Lunch

0.36

Supper

Sub 12.4 Silver City

✓ 3.42

Freight one box

✓ 6.30

Supper

✓ 1.70

Room 6/8 thru 6/11

✓ 10.20

Revisited Georgetown, Collected  
 good Lake Valley on N side Canyon  
 at about point where massive  
 layers plunge under Canyon  
 floor. Sent off one box from  
 Silver City consisting of Dev. + Miss.

✓ June 12

Breakfast

✓ 0.66

Room Douglas 2 nights

✓ 5.00

Lunch

✓ 0.60

Supper

✓ 1.60

Rasp, hammer handle, 2 chisels

✓ 2.10

Found small hillcock east  
 of Blanca without trouble.  
 It is about 0.1-0.2 mile east  
 of U.S. 80. It is 12.7 miles by road  
 west of Douglas underpass on  
 west side of town. Locality 0.4  
 miles from N end largest knob.



✓ June 13  
 Breakfast ✓ 0.70  
 Lunch ✓ 0.35  
 Supper ✓ 1.50  
 Wheel change ✓ 0.30

Visited hill 12.7 miles N 75° W  
 of Douglas smelter and  
 collected there all day.

✓ June 14  
 Breakfast 0.75  
 Lunch 0.86  
 Supper 1.75  
 Bobs Bisbee 12.1 ✓ 3.28  
 Ship 2 boxes ✓ 16.66  
 Rivet rucksack ✓ 0.25  
 Room, Douglas 1 night ✓ 2.50

Brachiopods occur in north hill  
 and north end of next hill south.  
 They seem to be confined to a zone  
 of organic (now silicified) sand in  
 a blue gray matrix. This zone  
 occurs along the east face of the  
 hill just above the talus. Brachio-  
 also appear just under the sandy  
 zone. Sandy zone contains crescent  
 shaped plicated oysters, small rudists  
 and occasional echinoids. Brachio range  
 for 20 feet above "sandy" bed and 5<sup>1/2</sup>  
 feet below it making a total  
 range of 25 feet. Sandy zone  
 well displayed in long sloping  
 north end of north hill where  
 limestone descends below the plain.  
 Brachio uncommon at north end  
 of hill.

Brachio are most numerous  
 at the saddle between the north  
 hill and the one next south.

Check

June 11  
 Wire \$11.00



which exposes higher beds except along the NE face where some brachiopods may be found. At the saddle the beds range for about 15-20' vertically. Here the beds above the sandy layers are a mass of corals, sponges and algae with a few pelecypods scattered among them. In these upper beds the brachiopods are less numerous than below. The sandy beds occupy the most of the saddle and contain some brachs, but just under the sandy beds are brachial beds abounding brachs, beds some 5' thick. This is a total range of brachs of about 20-25'.

Traveller's cheques to June 15.

\$10<sup>00</sup>

A 50,792,584  
 " 50 5  
 " 50 6  
 " 50 7  
 " 50 8  
 " 50 9  
 " 510  
 " 511  
 " 512  
 " 513

\$20

B 43,545,322  
 " 23  
 " 24  
 " 25  
 " 26



June 15	
Breakfast	✓ 0.75
Lunch	✓ 0.60
Supper	✓ 1.00
Gas Deming 8.16	✓ 2.32
Service car, gas 6.9 gals El Paso	✓ 4.86

Moved from Douglas, Ariz to El Paso.

June 16.	
Remember Bill Strain to Al.	
Breakfast	0.75
Lunch	1.05
Supper	1.00
Spent morning at El Paso with L.A. Nelson. Afternoon collecting?	

June 17.	
Breakfast	} 1.25
Lunch	
Lodging 3 nights El Paso	10.50

June 18	
Breakfast	✓ 0.75
Lunch	✓ 0.90
Supper	✓ 1.25
Gas 9 gals Van Horn	✓ 2.34
Purchase generator	✓ 25.00
Rock hammer + handle	✓ 2.50
Packing supplies	✓ 6.27
Laundry	✓ 2.07

New generator put on in El Paso



✓ June 19  
 Breakfast 0.80  
 Lunch 0.75  
 Supper 1.25

Threatened rain all day. Morning worked on weed mtns. in 7 hrs. fm. Collecting and results poor. Afternoon collected 702C. Took about 12 blocks.

Box 1 - 702C 7 blocks?

Box 2 - 702C 4 "

✓ June 20  
 Breakfast ✓ 0.80  
 Lunch ✓ 0.25  
 Supper ✓ 0.90  
 Telegram to A.R. Loeblich ✓ 0.98  
 Gas 8.3 gals. Marathon ✓ 2.15

Collected at Split Fork all morning and at Word Ranch (703D) in afternoon. Packed 3 boxes.

Boxes 3-5. Contain 2 block 702C, all of but 1 of 702(un), all 702 ent and some 703D.

7026 must be changed to 0.3-0.4 miles east of Split Fork on south side of road.

✓ June 21  
 Breakfast 0.80  
 Lunch 0.40  
 Supper 1.25  
~~Gas~~

Worked 0.4 mile east of Split Fork and at Word Ranch. Packed 4 boxes.



0122

Burpees from Marathon  
Box

1	281
2	221
3	266
4	259
5	319
6	192
7	244
8	248
9	220
10	250
11	259

12 (Block) 83

13. Block 180

14 Block 100

15 Block 105

16 Block 108

17 Block 192

768

2759

3022

768

3527



Topmost beds  
Spring Creek

15'

Hard massive with square  
Opikina & Receptaculites

33'

Bryozoa coquina

13'

I  
Platy ls. crowded with  
Strophomena.

44'

H  
+  
G

Shaly platy ls with Strophomena  
Campylarthia, Hesperotina  
Base shaly beds with Hesperotina  
Massive ledges forming dip slope  
on N side main dome contain  
Reps., Sowerbyella, Campylarthia  
obesa.



0137

July 10 cont'd

Supper  $\checkmark$  1.12  
 Express boxes from Washington  $\checkmark$  11.76  
 Nails  $\checkmark$  0.75  
 Gas 8.6 gals.  $\checkmark$  2.14

Plectotrophia

748-2N-12W.

Comanche County, Oklahoma

15' above base of Fort Hill (Stratigraphically)  
 just above Chonetophorus zone.

Send Fredericksen block of Plectotrophia  
limestone.

Wetumka NW  $\frac{1}{4}$  NE  $\frac{1}{4}$  18-3N-7E  
 go to Ahlozo,  $1\frac{3}{4}$  mi E on sect. line  
 just N

Penn. loc. NE  $\frac{1}{4}$  SW  $\frac{1}{4}$  32-3S-4E,

Johnston Co., Okla. roughly  
 10 miles WNW of Ravia.

July 9 Th.



✓ July 11.

Breakfast

72914

✓ 1.02

Lunch

✓ 0.79

Supper

✓ 1.12

Write proposition of exchange  
to L. A. NelsonWe turn Ka shale 1.95 Miles  
E of OK/2 Homa 3, Between  
005 and 0.1 Miles E of PipelineGas 10.7 gals 1 qt oil  
72971

✓ 2.77

✓ July 12

Breakfast

Lunch

Supper

0  
1/2  
3240  
214  
226

680

✓ 0.87

✓ 0.45

Supper

Freight 3 boxes

✓ 1.83  
✓ 23.81

July 13.

Breakfast

Lunch

Supper

Hotel 9 nights Sulphur

✓ 0.87

✓ 0.74

✓ 1.12

✓ 27.54



July 13 Rock Crossing

Reference point in Deckers section is Stachadite bed which occurs on inside of loop of stream and only bed there. It is about 30-35' below Multicostella. Below

~~multicostella~~ The beds are predominantly siltstone, often very thin bedded, ss and calcareous ss or siltstone. Fossils occur in this sequence but are not common and

Deckers zones

1 = 14 paces, zone 2 = 19, zone 3 = 43, zone 4 = 11

Zone 1 - contains Valcourea magna, Wide hinged Opikina minnesotensis, large Strophomena. I saw no Dalmanites in this zone. Sowerbyella is common.

Zone 2 - This contains Oxoplocia, Hesperotina, and Dalmanites. I think these two zones (1+2) could be combined into one zone.

Zone 3 - Contains mostly trilobite fragments particularly Leptodomas which is abundant in lower part.

~~Zone 4~~



Zone 4 - Base of this zone contains the small *Strophomena* also seen above *Multicostella* at Spring Creek. It is composed of beds of calcarenite and rough appearing limestone alternating with crin type of calcilutite.

Ham F 564 -

1900' E ~~of~~ and 1600' N of

SW cor 30-15-1W, ~~to~~

Murray Co., OKla.

Mid. West Spring Creek



July 14

Breakfast		✓ 1.07
Gas Ponca City	11.9	✓ 2.98
Lunch		0.47
Supper		0.97
Service car, pack front wheels gas 8 gal		✓ 6.82
Freight one box Arkansas City		✓ 7.69

July 15

Breakfast		✓ 0.56
Lunch		✓ 0.61
Supper		✓ 0.50
Gas: Ottawa, Kans	12.3	✓ 2.88
Lodging Coffeyville		✓ 6.00

July 16 -

Breakfast		0.66
Lunch		0.44
Send R.C. M. Dietzendorf		
Wellen		

July 17.

Breakfast		✓ 0.66
Lunch		✓ 0.49
Paraffin 6 pounds.		✓ 0.92
Supper		✓ 0.69
Freight one box (Lawrence)		✓ 5.64



June 18

Breakfast  
Lunch  
Supper

✓ 0.80

✓ 0.52

✓ 0.77

July 19.  
Breakfast  
Lunch  
Supper  
Sunday

0.74

0.56

1.89

0.59

✓ 1.26

July 20.  
Breakfast  
Lunch  
Supper

0.66

0.46

3.02

1.90

July 21  
Breakfast  
Lunch  
Supper

0.50

1.91

0.72

0.69

July 22  
Breakfast  
Lunch  
Supper

0.56

0.57

0.61

North American Hotel

July 23  
Breakfast  
Hotel 8 nights Lawrence  
Gas Ottawa 7.8 gals.  
Lunch "  
Supper  
Lodging, Jeff City2.96  
62  
5.62

0.66

✓ 24.00

✓ 1.84

0.56

2.40

3.83



July 21

1/10 mi. E &amp; 0.9 mi. N of Eudora

Stoner ls. (Echinocoelurus)  
 Eudora gray & blk shale  
 Captain Creek ls. with Eutelester

Bonner Sprs.

Plattsburg ls.  
 Wyandotte ls. with pellet (4')  
 bed containing mollusks.

Argentine  
 (Frasbie member) Wyandotte

"Dola"  
 June sh.

West Muncie Bluffs W of KC

Raytown  
 Muncie Creek sh. } Dola  
 Paola ls.

~~Muncie~~ Charmite shale

Dinner (Cement City member)

~~Westerville~~ sh. Aniversa sh.

Westerville ls.

Fontana sh.



July 29.

Breakfast

0.55

Lunch

0.65

Gas.

Tip.

0.25

Bridge Toll Wheeling, W Va

0.25

Supper

2.00

July 30.

Sly Gap (Type locality)  
Log from windmill in  
Sly gap to Rhodes pass road  
(N. Mex. 52)

Windmill in Gap. 94.6

fork to Greer Ranch 97.0

to N-S road 99.0

South to Benchmark 4118 at

Jackson Ranch 103.3.

Jackson Ranch to Rhodes

Pass (N. Mex Hy 52) junction 110.0







1952

SM 672 for ticket  
 SM 673 for Pullman  
 Mr. Weergaard

July 9

Arrived Tulsa, Okla. Wednesday morning 8:30 A.M. Left Tulsa for Adair, Okla about 10:00 A.M.

Collected east of Adair in

on Okla 28

Fayetteville shale. Locality reached by going 4.3 miles east of Adair then turn south. Follow road south for 2 miles to first cross-road. Go east about one mile. Walk south-southeast  $\frac{1}{4}$  mile to low scarp. Collecting along east and south faces. This puts the locality in the N  $\frac{1}{2}$  of section 7-T22N, R20E. Check on road map.

July 10

Went out east of Muskogee for day. Collected east of Fat Gibson in the Mayas. Go east on US 62 for  $6\frac{1}{2}$  miles and turn south in middle of section 12 and follow road



②

Chick

to sharp bend just over bridge, from bend road goes east for about one mile to collecting place which is where road starts up hill. This puts the locality just on the north side of the section line opposite the Muskogee-Cherokee County line in Cherokee County. Bowsher gives locality as NE  $\frac{1}{4}$  NW  $\frac{1}{4}$  18-15 N-21 E. The locality should be near line between sections 7 and 18-15 N-21 E.

July 12

In morning collected a few minutes about 2.3 miles west of Putnam on Knob of Putnam formation. New U.S. 14 by 80 runs on south side of Knobs.

at Baird walked railroad from 1-2 miles NW of Baird looking for Permian fossils found very few.

Went south to Ballinger to collect in R. C. Moore's Colorado River area. Went first to 9843 east of the Colorado River. Here about  $\frac{1}{2}$  mile down a small



(3)

Creek a section of 20-30' appears in a bend of the creek. At the base Meekella inexicana is abundant in a single band about a foot thick. It is accompanied by a dictyoelostid of moderate size. In the limestone a few feet above Meekella the dictyoelostid is larger than below and may be another species. In the uppermost exposed limestones nearer the head of the creek the dictyoelostids are silicified.

Moore's locality 9857 is on the roadside on top of the river bluff. Here limy shale and limestone contain large dictyoelostid in abundance, many of them with the ears and both valves clear. Along with the dictyoelostid occurs a Heteralosia-like brachiopod. Little else besides Myalina was seen.



(4)

738

July 14 - Flat in morning. Went to call on Mr. Wallace Pratt, then went to mouth of McKittrick Canyon to collect Lamar ls. Collecting place about 0.3 mile N 80° E of section Twelve well just east of entrance to McKittrick Canyon. Took 9 blocks. Lamar here is platy dark limestone. The fossils occur in lenticular swellings of the limestone.

July 15

732

First locality Getaway Is just south of road  $\frac{1}{2}$  mile west of bend at elevation 5316. <sup>Set</sup> July 1552

Newell  
512

Second locality base of limestone ca 0.4 mile S of road and about  $\frac{1}{2}$  mile west of road bend at 5316. Just S of last S in Guadalupe Pass. <sup>Set</sup> July 1552 F2

733

July 1552 F3 - Hegler Ranch. About  $\frac{1}{4}$  mile S 55° W of ranch house up small canyon. Newell 398

F4 July 1552 Mid Pinery about  $\frac{1}{2}$  mile S of Hegler Ranch



⑤  
735 F5 Jy 1552 about 100 yds S.  
of F3 Jy 1552

736 F6 Jy 1552 About one mile N  
of Hegler Ranch. Pinery

737a July 16  
Went to Big Canyon. Collected  
Crack-out Capital with many  
Squamularia and Martinia on  
spur on north side of canyon  
about 1000 feet above canyon.

737 Left hill about 12:30 and went  
into mouth of canyon and took  
5 blocks out of massive Lamar  
limestone.

Blocks			
Lamar	McKittick		9
Getaway	Newell	512	12
"	Jy 1552		2
Hegler	Ranch	Mid Pinery	4
"	"	Pinery F6	4
Big Canyon	Lamar	Jy 16	5
			<hr/> 36

Locality for Crackout Lamar —  
My collection from McKittick Canyon  
is Rader

includes  
2 blocks  
from loc 600:  
Jy 1552



0408

Jy 16 - North side Big Canyon  
about 6100' elevation on southeast  
spur of Lonesome Ridge,  
Carlsbad Caverns West  $\square$ , N. Mex - Texas.

Jy 16 blocks about  $\frac{1}{4}$  mile  
from mouth of Big Canyon  
on northeast side, Carlsbad  
Caverns West  $\square$ , N. Mex - Texas.



July 17

Shipped 2680 pounds from  
Carlsbad.

July 21

Met Madeline Caraway  
in Hillsboro.

July 22

Mud Springs Notes.

Pennsylvanian

5'±

cobbly ls. with Pennsylvanian fossils

5'±

Bright green shale

greenish shale with small

40-  
45'

nodules and nodular layers in  
bands. *Nerostrophia*, *Thomasaria*

20'

Yellow to brown weathering nodular shale  
Abundant scattered *Atrypa*, *Schizophoria*  
and *Leiorhynchus*.

15'

Yellow-weathering nodular shale  
with large *Atrypa* and many  
crinoid stems. Fossils numerous  
*Sphaerosporgia* at top.

Silurian



July 23.

Went 4 miles east of Derry, N.M. on good road up to Flouite mines in Caballo Mtns. Mines called Macky-A, owned by a Mr. Luciani.

About  $\frac{1}{2}$  mile E of mines and at base of hills in washes in the fan were seen some 20-30' of gray shale weathering red or yellow and abounding in fossils. *Martinia* is common but a large *Atrypa* was abundant. Below this, yellow shales contained large *Schizophoria*. The fossils, except for *Martinia*, reminded me of the lower 25-30' of beds seen in Mud Springs Mtns.

At the mines some Devonian shale was thrown out. This produced large *Martinia* and *Atrypa* but also *Hypothyridina*. The beds seem clearly to be Sly Gap.



July 25

Collected Sly Gap in Indian Wells Canyon. Looked for small *Gypidula* which occurs about 15' above base at first exposure seen. It occurs in a thin yellowish hard band about one foot below a triple or double tier of hard beds. It occurs with *Thomasania* and *Acutatheca*.



July 25

Visited Canyon of Horse Camp reached 18 miles S of Alamogordo, 7 miles S of Valmont, then go east about 13 miles to Horse Camp. About 3 miles ENE of Horse Camp in arroyo just W of road and about 20-40' below abo contact is ledge of limestone abounding in small brachiopods particularly *Cryptacanthia* (or *Glossothyris*). This would be about the highest Pennsylvanian in this canyon although green abo-type sandstone occurs about 50' below the fossil ledge. Just above the *Cryptacanthia* ledge occurs a layer abounding in *Kozlowskia*. Just about 1/2 mile west of the Horse Camp is a knoll with a prominent ledge of limestone containing abundant snails and some pholadites, the latter mostly crushed.

Jy 25'

## Pictures

- 1-3 - Guadalupe
- 4 - Percha at Bear Mtn.
- 5 - Indian Wells Canyon from City
- 6 - Indian Wells Reef
- 7 - Indian Wells Reef
- 8 - Indian Wells Devonian
- 9 - Indian Wells Devonian
- 10 - *Cryptacanthia* ledge
- 11 - Dev. Rhodes Pass
- 12 - Salinas Peak, San Andres Mtns.



Air Provost Marshall who gave permission to go to Rhodes Pass is Major William T. Haynor. Cooper write, Holloman Air Base, Alamogordo, N. Mex. Thank Haynor on behalf of Bowsher, Allen & self.

Captain Bernard N. Hayen, Base Supply Officer, Holloman Air Base. Thank for services in crating fossils to Washington. Include personnel.

See Hulbert, Okla. D., 15' sheet for localities for Mayes & Fayetteville east of Fort Gibson, Okla.

## 2nd Roll -

1. Derbyia bed 3.1 miles S. of Dexter, Kans.

From Ponca City to Kansas. 3.1 miles S of Dexter new cut on Kans. Hwy 15, 3.1 miles south of Dexter. Derbyias occur just above red shales. Wenton US 160 east from Burden to Grenola.  $1\frac{1}{4}$  mi E of Burden RR cut & by cut with Derbyia abundant. No collecting between Burden & Cambridge. 6.1 miles E of Cambridge cut at top of hill overlooking a wide valley. Here pelcy pods were common. On both sides of highway at 6.3 miles E of Cambridge shales contain large Dictyoelostus, Murchella etc. This locality is 0.1 mile west of the Cowley - Elk Co. line. One mile East of the County line occurred a cut on the US 160 abounding in Trionyx. 2 miles E of the County line another cut contains abundant Crinoid stems. Collected on Cowley - Elk



August 1.

Qy.  $\frac{1}{2}$  mile NE of Burbank. Collection made in south end of quarry located on south arroyo leading into Salt Creek. The quarry in which we collected is about 0.4 mile south of U.S. 60. This puts quarry in SW  $\frac{1}{4}$  SE 25-26 N-5 E. Labels should be corrected. The horizon seems to be Red Eagle ls. which is thicker than hitherto believed.

Collected on Santa Fe RR, 2 miles NW of Fairfax in SW  $\frac{1}{4}$  NE 2-24 N-5 E. Here shale is overlain by 3 ledges of limestone abounding in fusulines. The shales abound in fossils, *Spirifer* being very abundant. This section is probably Foraker also.



1929  
8950

May 2

Left Washington by train to join J. Bridge  
in Bristol, Va. Drove to Knoxville on  
same evening.

May 3.

Drove from Knoxville to Chattanooga.  
Saw Fort Payne, Chester limestones and  
Pennsylvanian on north nose of Lookout  
Mtn. at Chattanooga. Took U.S. 11 to  
Birmingham. Just W. of Chattanooga  
on U.S. 11 Lookout Mtn. under RR  
bridge saw Chattanooga, then Silurian,  
Richmond, and Trenton. Trenton &  
Richmond shows all on down the  
Georgia strip of Hy 11. According to  
Mr. Butts an excellent section up  
to the Silurian is exposed NW. of  
Collinsville, Alabama.

May 4

Stopped on U.S. Hy 31 at crossing  
with Cahaba Creek, 3 mi N. of  
Pelham, NW 1/4 6-20S-2W,  
outcrop of Newala ls. blue gray  
weathering, out-lithographed.  
Ceratopora under bridge, large  
cephs with central septum, Blythea,  
and Prophylla, Leptobolus.

0.2 mile south of Pratt Ferry  
where old road turns off west  
from new road above Lenoir  
occurs 10-12' Whitesburg. Lower 8-10'



479

consists of granular brown limestone with many fossils, in beds 1" - 4" thick. Upper 2 to 4 feet or perhaps more consists of smooth dark gray bituminous limestone with similar fossils as those below. These & upper limestones interfinger with the Athens overlying it. Athens has many graptolites. Good place to collect them.

The Lenoir limestone is exposed from the bridge over Cahaba River up the hill for a little less than 0.2 mile.

152 paces down road <sup>from Whitesburg</sup> Christiania was taken in loose block of Lenoir. Probably not far out of place. Lenoir  $N 68^{\circ} E 25^{\circ} - 30^{\circ} SE$ . Dip + strike taken at Christiania boulder. This genus must be about 100' below Whitesburg.

Under bridge at six mile is good outcrop of Ketona dolomite light gray dark weathering, and massive.

The fine-grained limestone at top of Athens is exposed for 1800' along road to west.



May 5

Saw Conasauga and Brierfield in  
Montevallo and along creek  
flowing through town.

On Ala. Hg. 25, near <sup>3/4 mi. E. of</sup> Navaho P.O. on  
road and RR cut in Athens shale.  
Going east from Montevallo passed  
through S then first bluff was  
~~Chapin~~ Copper Ridge. Thick  
Canadian limestone + chert. 500  
feet of Lenoir are ~~exposed~~ present  
but not well exposed. Athens black  
shale with many graptolites overlain  
by about 15"-18" of 4' log Mt. ss. The  
ss is overlain by Fort Payne chert  
ss. dips about east. 8°. Mr. Butts  
thinks the ss. may be Onondaga.

At Calera turned N on U.S. 31.

Lenoir exposed west of road across  
RR. at Alabaster. Athens occurs  
in ditch just over RR. and Little  
Oak appears above the Athens in  
ridge east of the highway.

Just S of road to west Floyd sh  
is exposed on RR track.

Just S of turn to west in  
Alabaster and on east side of  
U.S. 31 occurs a large cut in  
the Athens shale.

At RR bridge in S. edge of  
Pebble excellent locality of  
Little Oak. Bluish banded ls.



with thin bands of chert and  
modules of chert. Fort Payne  
Chert overlies the Little Oak.

480

In field about  $\frac{1}{2}$  mile North  
of this R.R. bridge and on west side  
of Hy 31, on a knoll about 100 yds  
west of Hy. occur loose Little Oak  
fossils. Little Oak fossils occur in  
much of the debris washed down from  
the slope of the ridge.

481

About 1 mile south of Cahaba  
Valley Creek is a large quarry in  
the Little Oak. Here it is hard  
bluish, very massive limestone with  
thin layers of chert. Fossils occur  
in the debris stripped from the  
limestone. The *Blunaria buttsi* is  
abundant in a zone about 10' thick  
which occurs about 30 feet below  
the top of the Little Oak.

482

Bridge Fork, <sup>ridge of</sup> Newala cephalopod  
250-300 feet below top of Newala. This  
is also horizon of *Polytolochia fillistriata*

Along R.R. east of Leeds  
where the line of Georgia Central  
crosses US 78 is a cut showing  
Frog Mtn ss., 3' of Chattanooga  
attached to red shale and overlain  
by Fort Payne chert. In ridge  
to north the Little Oak under-  
lies the Fort Payne



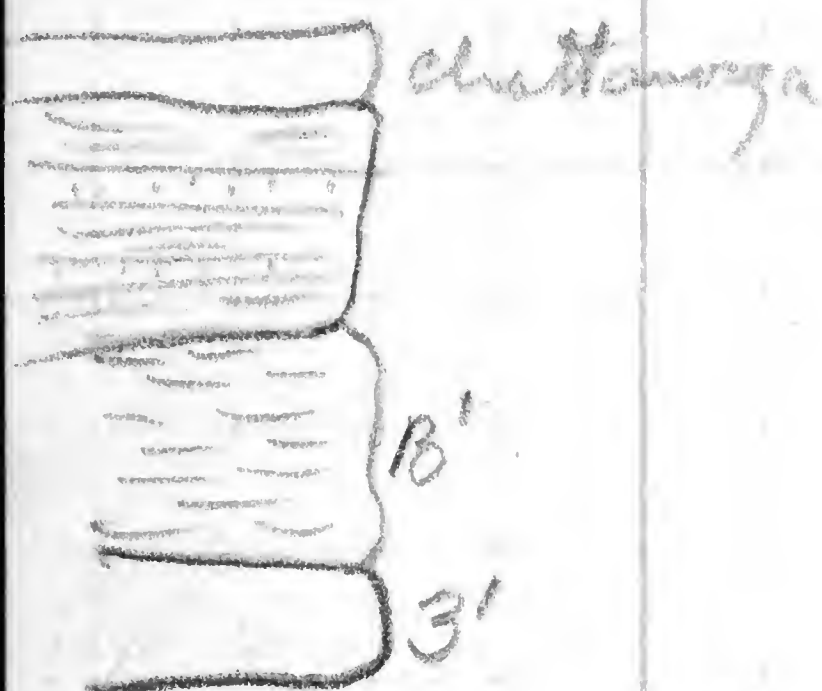
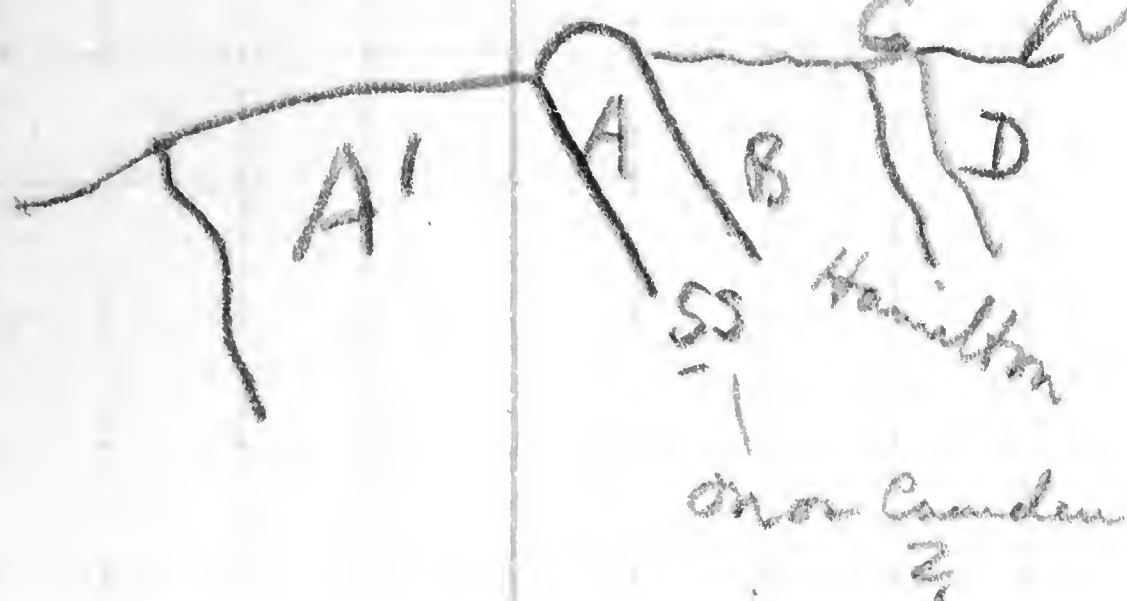
0572

5

May 6.  
Cox Gap.

N 35 E 55 SE

Devonian



A - about 3' hard blue gray ss.

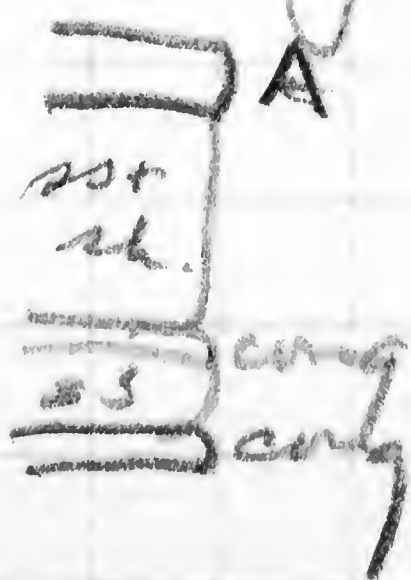
B - 25 feet long in outcrop (20') sandy dark greenish very fine grained shaly weathering ss.

C. 2 1/2 - 3' of Chattanooga shale.

D - Fort Payne (New Providence)

B. Lower half of B breaks into fine grained dark shaly rock upper half sandier with heavier sandy beds about a foot thick. Upper half contained *Tropidoleptus*. Hamilton dips N 35 E 55 SE

A<sup>1</sup> = 14 pieces alternating sandy shale & ss in thin beds up to 3" for the ss. At base is 12" of hard coarse conglomeratic ss, followed by 2 1/2' soft ss then another foot of conglomerate



At top just under A occur *Orthis flabellites* and other Silurian fossils



First trip in morning went  
 1/2 mile east of Odenville to old  
 borrow pit on north side of R.R.  
 The fossils were taken from upper  
 Odenville.

Fort Payne

Rogland Dy. 1 1/2 mi. SE of Rogland

A - Little Oak

B - 8"-1' limestone welded to  
 Little Oak.

C. Sandy crumbly shale  
 about 3'.

D. - Soft sandy ~~rock~~ with  
 many corals. 1'

E. 3" with Anoplotheca <sup>with C. coronatus</sup>

F. harder and with *Tropidoleptus* occurs also below  
 the Anoplotheca. Above

Anoplotheca sandstone because

F. harder and with *Tropidoleptus*  
 very abundant in the lower 5'  
 Fossils rare above

38-1

35'

E  
 D  
 C  
 B  
 A



igger  
 Bounding  
 House



May 7

Drove from Fayette NW to Caltat Gap up through Knox, Chincamunga, Richmond and Red Mountain (Clinton) Divide is made up of Silurian with thin Chattanooga not far above the road. NW of gap we went down through the section onto type Chincamunga which consists of Trenton, Lowville, Lebanon with Pionodemas, underlain by a thin equivalent of Lenoir. Here a fine-grained dark limestone with black rosey chert. The Lenoir is underlain by Mosheim a gray lithographic limestone. The Mosheim is underlain by Murphreesboro here fine-grained thin bedded dark limestone weathering to light gray. Lower Murphreesboro is well exposed on bank of Chincamunga Creek. Contains a large Goniatites and many large, smooth ostracods. Knox occurs on opposite side of Creek at Pond Spring School house Avondale Stone Co. Ag.

Saw quarries in Lowville in East Chattanooga. Lowville dark buff ls., heavy bedded weathering purplish gray. Near top  $2\frac{1}{2}'$  or more of bentonite. Ls. just under bentonite is altered to chert  $2''$  thick. Fossils under bentonite. Some surfaces undercracked, ripple-marked. A second bentonite occurs near top of full



Quarry on Wilson Ave.

490

Collected from top of Lebanon  
southeast of Chiconmanga, Ga.  
Modular, thin-bedded ls  
separated by beds of shale  
abounding in bryozoa.  
Rafinesquina, Multicostella, Minella,  
Favosites, Strophomena.



May 8

Tenn. 113 over Signal Mtn. shows beautiful section on west side Walden ridge. The section consists of Portsville, Pennington, Chester limestones, Fort Payne chert, 3' of Maury shale, 15 feet of Chattanooga shale, Brasfield and Richmond. These exposures are about 5 mi. S of Duntrop. The same sequence occurs on the west slope of the same ridge SE of Pikeville up the Mountain to Galesburg Gap.

495 South of Pikeville we collected Ridley limestone along Crystal Creek. Came home from Pikeville via Dayton, Luddy and Daisy.

Collected Chattanooga fossils on W slope Walden Ridge from upper 16" of shale.



May 9.

In morning went east of Chattanooga to Parker Gap on Brainerd Road. One mile east of Parker Gap and in fields on south side of road exposures and glades of Gaapac Limestone. Among other fossils we got *Talareximus*, *Paleacis* and *Brachiopods*. Fossils are abundant.

496

Riceville  $\rightarrow$   $2\frac{1}{2}$  miles SSE of Riceville and 100 yards east of valley pike occur soft sandy weathered limy shales. dipping S-southeast about  $30^\circ$ . These shales lie on top of the Knox and about 120' above the Knox occurs many fossils. These were identified as *Tensin*. Possibly they are better called *Athens*!



May 10

11

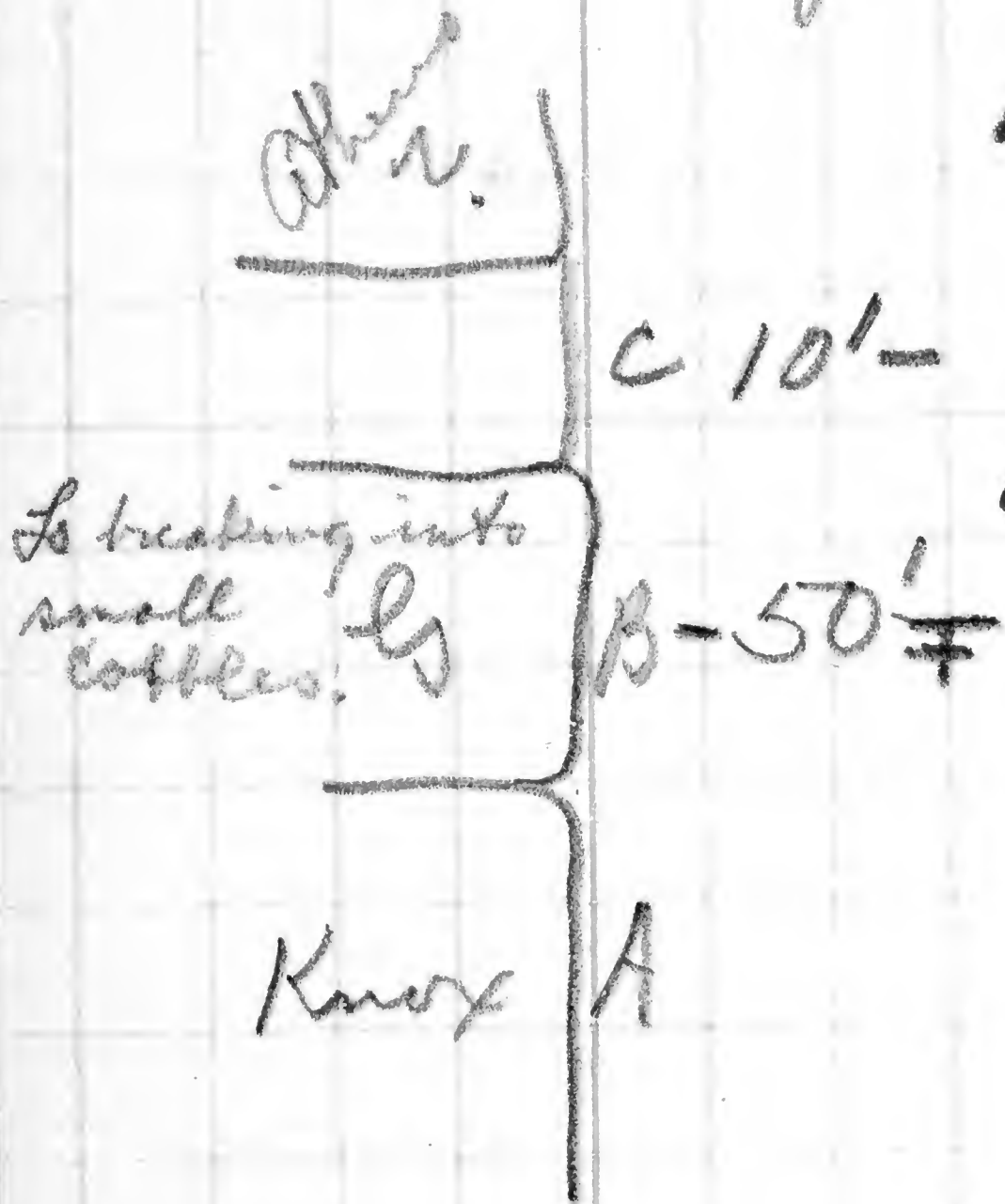
Athens Quad. 650' S40E of  
RR intersection at Ay in NE  
edge of Athens, bed 75' above top  
of Knox. Dip 20° on Knox N45°E

497 B - *Leptophragma* & *Valcam*  
about 15' below top of ls.  
Many bryozoa.

498 C. Sandy yellow shale  
with *Ricciella Rafinesquina*  
and *Christiania*

B - is said to be Lenoir

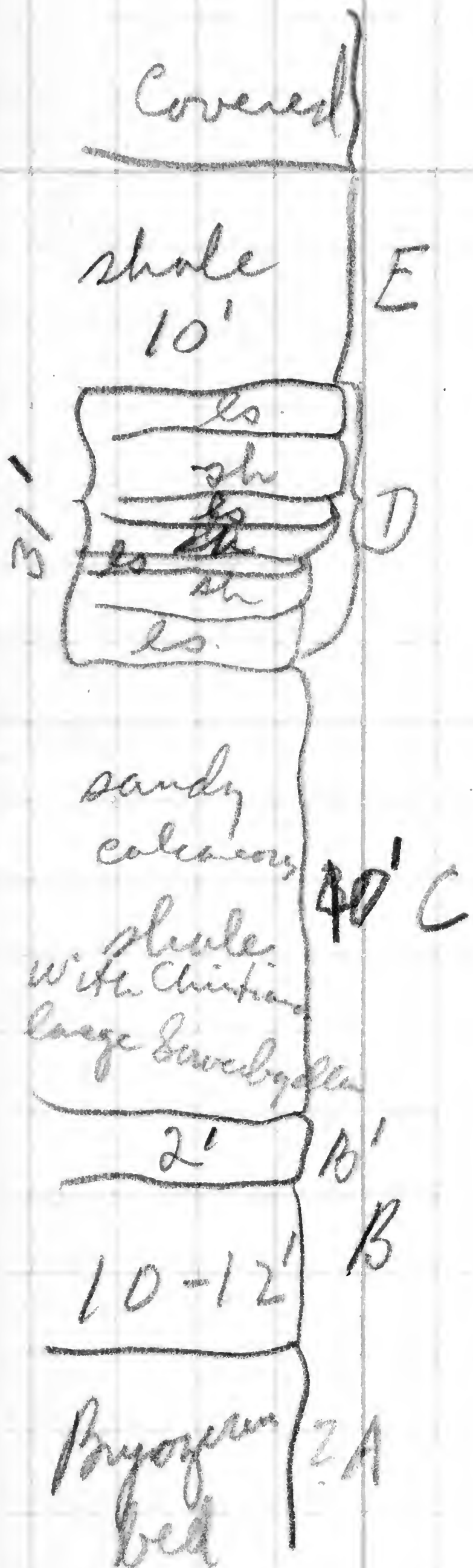
25' -



497  
498



1.9 mi. NE of Christiansburg



A - bed with bryozoans like those at quarry in west edge of Athens.

B. sandy shale becoming nodular + lime at top

C. sandy shale with many *Christiania* particularly in ~~base~~ a 10' bed about 10' from base

D. Sh with 3 tiers of limestone nodular friable each 1-2' thick

E. yellow sandy shale

The Athens shale appears to be passing over to limestone to the NE.

499

### Friendsville

Mosheim appears on northwest side of the village, followed by Lenoir with Maclurea. The *Christiania* bed shows in the soil and in blocks in place at the corner of the last side street in the southeast side of town. Above the *Christiania* beds came *Multicostella saffordi* and *Plectrothis* and at very top 20' comes Atelasma; Bimuria

500

501

502

503 - 504



The Athens belt at Riceville appears to thicken and finally pass over completely into limestone between Riceville and Friendsville. A good transitional region is that 1.9 mi. NE of Christiansburg.



May 11

Went north to Maynardville from Knoxville. Stopped on Hy 33 at junction with Flint Creek road.

514

Here we collected from a nodular bed in the O'Hosee. Lowville overlies the O'Hosee at this place.

From here we went to a narrow bend of the road east of Acuff to collect from high O'Hosee.

Wardell

516

Here we got many small dalmanellids.

Then we collected many

517

Hesperorthis from lower Lowville at Little Baren Church. Then followed this belt westward to ~~Sharp~~ Sharps Chapel. At the end of the Sharps Chapel road a full section can be seen from Knox, Murphreesboro, Mosheim, and Lowville. O'Hosee is absent from this belt. We found Hesperorthis low in the Lowville of this section.

Butts got Cryptophagnus  
above here  
10/26/45

(JH)



May 12

Went with Lee Collins into southeast side of Knoxville to see Lenoir. Here it is exposed over a large belt chiefly as knobby, blue gray weathering limestone. When exposed to weather the rock crumbles to small cobbles which contain the fossils when present.

527 Excellent exposures occur along Red Bud Road where upper 10'-20' are exposed. Here occur *Bimuria*, *Atelasma*, *Isophragma* and *Christiania*. This is essentially the same as the top of the Lenoir at Friendsville.

Near mouth of Bennett Creek Lenoir is exposed with *Bimuria*, *Atelasma*, *Laticura* and *Christiania*.

On Farm road (Tenn. 33A), 1.4 miles S of Farm bridge collected from a water zone in Tullahoma. Fossils suggested Whitesburg or Holston species: *Multicostella* and *Cyrtostella*.



May 13.

16

512

Visit locality in Fountain City on Bricker place. Behind house near creek *Oxoplectra* occurs in residual soil with *Tridacnites*. The dip is generally southward. On road north of house good *Oxoplectra* with many fossils occurs. This dips under the *Oxoplectra* beds, making them *Oxoplectra* and not Lenoir as supposed by Moneymaker.

511

an afternoon drove over Thorn Hill and Evans Ferry sections



150  
.9  
1350



Whitesburg. The latter is quite thin at this place, not 30 over 10'.

607

In afternoon went northeast on U.S. 11 for about 7 miles to collect Athens with silicified trilobites on the west side of the road. The Athens makes a wide belt here and many silicified specimens are obtainable.

Later in afternoon collected Whitesburg about  $2\frac{1}{2}$  miles southeast of Harrisonburg. Relations to Athens same as other localities.



28

—





May 14

17.

Collected from beds  $1\frac{1}{2}$  miles NE of Lone Mountain and 0.4 mile due north of a long arm of Norris Lake on Lone Mountain to Fajewell Road.

533

Murfreesboro limestone and Mosheim exposed 0.3 mile NNE of road intersection. These are followed by yellow-weathering shaly limestone with *Dolewides*, *Mimella*, *Rafinesquina*, *Strophomena*, *Sowerbyella*.

532

Some distance (70') above this zone occur *Rhynchonellids*, *Diorthis* and *Oligorhynchia*. This zone was said to be in the Lowville. The entire section above the Mosheim may be Lowville.



May 14

18

Section N30° W of Eidson, Tenn

A - Knox

B - Cherty limestone forming slope with red soil and black shale chips. *Rhynchonella*, *Mimella*, *Dinorthis* 264'

C. Cobble limestone with *Dinorthis*, *Multicostella*, *Laticurra*, *Rafinesquina*, *Oxoplectra*, *Mimella* 44'

D. Alternating limestone and thin seams of shaly limestone 229'

E. First marble (Holston?) 70'

F. Shale *Mimella* *Otosee* 275'

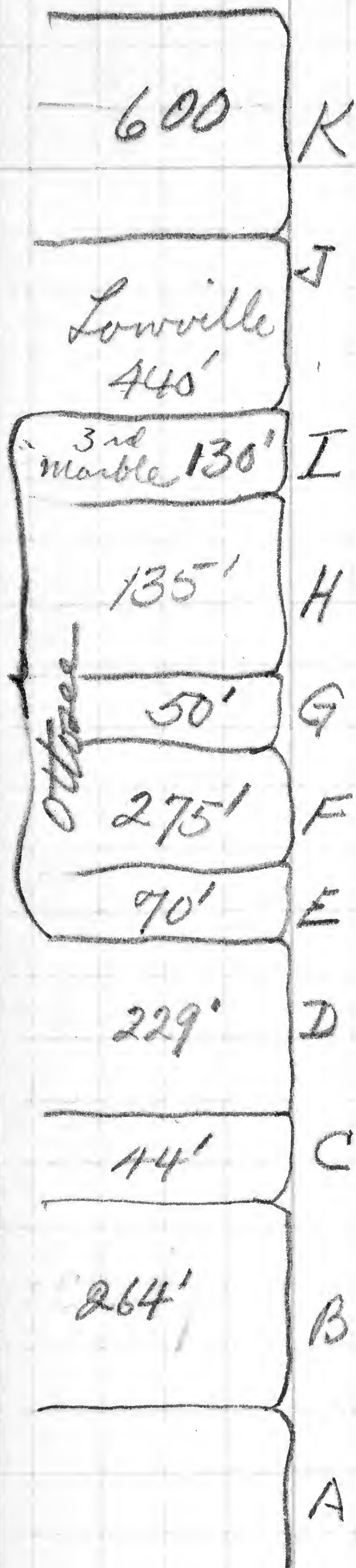
G. 2nd marble wedges out 50'  
1/2 mile west of road

H - Shale with *Rafinesquina*, *Mimella*, *Multicostella*, *Strophomena*

I 3rd Marble <sup>Lower half dark modular ls.</sup> 135'  
<sup>upper half pink marble</sup> 130'

J. Lowville, lower red and yellow zone 220'; limy zone with *Beatricea* 220';

K - Moccasin about 600'





May 15

19

539

Shipped 4 kegs from Mountstown then went to a point about 2 miles SW of Bulls Gap to see Lenoir, Whitesburg and Athens. Lenoir is cobbly limestone breaking down to glady exposures where frost can get at it. Fossils are scarce. *Maclurites* occurs not far from the bottom. Other fossils seen were *Rhynchonella*, *Rafinesquina*, *Gesperorthia*, *Valcouria* and a flat sponge.

540

Lenoir is succeeded abruptly by Whitesburg, a thin-bedded, dark fine-grained to smooth limestone. This breaks down to slabs and pieces. The exposure is mainly of slopes strewn with the fragments. There are about 300 feet of this formation. Fossils are abundant in some of the layers.

In afternoon saw the Athens east of Bulls Gap along a stream under the RR about  $1\frac{1}{2}$  mile east of the RR Station. Here it was a limestone in beds up to 6" thick. Higher in the section the Athens is blue gray calcareous arenaceous shale that weathers to a soft punky rock. Fossils are rare.



541 Later went to a long  
railroad cut in the Athens  
one mile south of Otes. Here  
the Athens is shale and thin  
bedded limestone. Fossils of a few  
kinds are common: *Multicoella*,  
*Calliops*, *Homotelus*, *Lonchodomas*,  
*Lingula* 3 sp.



0589

May 16

21

548

546

Went on US 11 northeast of Rogersville to see Cambrian and Chepultpec. Between 6+7 miles from Rogersville the Chepultpec is well exposed. *Finkelburgia* was seen in place. *Syntrophina* was collected in loose chert.

556

In afternoon drove up valley of War Gap Creek to Speeds Ferry. The Otsego shale seemed to diminish in thickness. At Marcell quarry 12 miles west of Gate City the quarry is in the Holston?

At top of quarry on N side cherty limestones contain *Dinorthis*, *Rhyndocanaria*, *Sowerbyites* and many bryozoa. Below this bed about 20' occurs a shaly layer with many bryozoa. These fossil beds are about 300' above the Knox. Above the fossil beds is the Holston ls? The Holston? is overlain by Otsego with *Echinospira*. I think this Otsego may equal the yellow shale ( ) that occurs above the third limestone and below the Moccasin at Eidson. If this be so the Otsego at Gate City is a higher bed than that at Eidson.



and the Thorn Hill section 22  
 The fauna of the cherty beds  
 at Marcell suggests Raymond's  
 Holston at Goodwin Ferry.

May 17.

537

Went from Bristol to Cumberland  
 Gap. Went out US <sup>58</sup><sub>421</sub> to Clinchport  
 then took Tennessee 70 from  
 Clinchport to Pattonville. Along  
 this road is a beautiful exposure  
 of Nolichucky with many trilobites.  
 Saw fine section up Powell Mtn.

We went south of Ewing on  
 Tennessee 62 to see the Fenster  
 along 4 Mile Creek. We discovered  
 Cambrian fossils in the sole of the  
 thrust. The Fenster shows Clinton  
 down to Marysville under the E  
 and the lower Knox



May 18

561

Cut just outside Tunnel on SE side Cumberland Gap is an exposure of Brassfield consisting of greenish sandy shale, thin sandstones capped by about 4' sandy limestone. Fossils are very abundant.

562

On other side of Tunnel the Mayville is well exposed and on the Ky above the Tunnel the Senoatchie or Juniata crops out and here has marine beds in it. At bottom of hill in Harrogate

563

the Trenton appears with *Platystrophia*, *Hebertella frankfortensis*, and *Rhynchotrema*.

The Louville appears below the Trenton.

568

In afternoon went of Little Lyeamore Creek to collect from Louville. About 20' above a thick marble bed occurs a 10' shaly zone with *Minella*, *Strophomena*, *Multidosella*, *Gascifera* and *Lowerbyella*.

575a

On U.S. 58, about 3 miles east of Cumberland Gap village the soil shows glades where upper Black River fossils can be collected *Hesperorthis*, *Rhynchotrema*, *Lowerbyella*, *Dalmanella*, *Strophomena*, *Pronodonta*.\*  
\* *Pronodonta* in Harry Whittington Coll.



The beds carrying these shells 24  
underlie shales that contain ostracods  
and *Pholidops*.

May 19

In morning visited Yellow  
Branch about 5 miles SE of  
Rose Hill, Va. Here was an  
excellent display of Mosheim  
probably 2 or 300 feet of it.

577a

577

Collected *Tetradium cellulatum*  
about 30' below Mosheim and a  
number of brachiopods below  
that. Lenoir overlies the Mosheim  
and contains a few fossils.  
Lowville with one or two red beds  
overlies the Lenoir and is about  
1000' thick.

575

In afternoon collected  
lower Trenton along U.S. 58  
about 3 1/4 miles east of  
Cumberland Gap. Here *Dalmanella*  
*Dinorthis*, *Sowerbyella* were  
abundant.



May 20

25

Went from Cumberland Gap to Gate City and then northeast on Virginia 174. The idea was to find Fugates Hill locality of Raymond. The site of the old Post Office was found. About a mile east of this place we went across Macassin Creek and searched for fossils in the shales overlying the "Holston". Fossils were not abundant. Six miles west of Fugates Hill P.O. and on the highway is another locality that afforded fair collecting.

*Mimella* was common in the lowest beds but higher in the section *Murchisonia* was abundant.

Near New Bethel Church another collecting ground was found which yielded many *Echinozaphrentis* as well as *Strophomena*, *Mimella*, *Multicostella*, *Rafinesquina*.

582  
582a

581

580



May 21

26

Porterfield quarry 5 miles east of  
Saltville, Virginia

Knox is exposed near the office  
on the quarry grounds but Lenoir  
appears not far above it. The  
lower part of the quarry is in  
Lenoir and is followed by Holston.  
This Holston is overlain by  
Whitesburg followed again by  
Holston faulted over the Whitesburg.  
Above the Holston occur 3 layers  
of marble, lenses in the  
Whitesburg. These are followed  
by other shale.

The second Holston mass seems  
to me to be a typical Paleozoic  
bioherm with fragmented bryozoa,  
cystids and crinoids all mixed  
together. To me there seemed to  
be no fault but the second  
Holston marble was a reef in  
the Whitesburg. The beds overlying  
the reef lens out into the  
Whitesburg.

After collecting at the quarry  
we studied ~~Otosee~~ limestone  
north of Marion and collected  
*Orthorynchula* near the top  
of the mountain above the  
Otosee.

R. H. Hens

Whitesburg

Marble  
Holston

sh + ls

Marble

Lenoir

Knox



May 22.

27

Lower beds of lower Ozone.  
must overlap this Lenoir.  
note 10/24/43. off.  
587  
589

Spent all morning packing 8 kegs. In afternoon visited quarries in NE edge of Marion. Here 50' of Mosheim lies on the knob and is overlain by 50' of Lenoir, nodular limestone which is shaly in the upper 5-10'. This shaly part contains brachiopods suggestive of the upper Lenoir at Knoxville such as *Bimuria*, and *cladophragma*.

Then we went 5 miles west of Marion to see Onondaga chert overlying the Ordovician.

May 23

Went from Marion northeastward to vicinity of Bland where we visited a small quarry in "Holston ls". This was a very pure crystalline limestone but fossils were not abundant. This quarry is said by Mr. Bratts to be the McNutt by mentioned in Raymond and Willard's paper.

After lunch in Bland we went down main road to SE and took first left turn to the Grayson farm. Here we

598-  
598a



598

598-a

saw Holston again like that at the McNeill Quarry. Above 28 it came thin-bedded gray granular limestone abounding in Trilobites. This is the Whitburg limestone. Above the Whitburg occurs smooth black limestones that weather to ash gray. These belong to the Athens formation. Above them occur dark gray or soe limestone.

May 24

599

In morning went from Salem, Va over Catawba Mt to Catawba Valley. went west of Catawba Sanatorium about 11 mile. Here we collected from Lenoir. Cyrtotrochella & Parrotinus C. as small Rafinesquina-like that at Riceville, C. These beds were originally called Holston by Edh. If not Lenoir they may be Whitburg because Mr. Butts puts upper part of these in the Whitburg. Lithologically the lower and upper parts are alike. The Lenoir + Whitburg together are not over 25'.

In afternoon met Bevan in Roanoke then went on to Lexington and visited Winkle



601

Creek about  $1\frac{1}{4}$  miles NW of the City. Here a thin layer of Mosheim rests on the Knox and a thin Lenoir lies on the Mosheim. Fine specimens of *Hesperothis*, *Mimella*, *Multicostella*, and *Valcourea* weather out of the Lenoir. The Holston is enormously thick here, the Whitesburg is thin and the Athens enormously thick.

May 25

602

Visited Whitesburg about  $\frac{3}{4}$  mile WNW of Lexington. Whitesburg consists of nodular limestone breaking down into slabs & plates. Trilobites common, *Oxoplocia* and *Parastrophia* fairly abundant. Suggests Ulrich's Strasburg formation.

603

In afternoon came to Harrisburg by bus in order to permit Whittington to visit Spring Hill.

May 26.

605

Went to collect "Whitesburg" one mile south of Paulington. Here silicified fossils occur in granular lenses in the Athens. The silicified specimens should be called Athens, rather than



October 18-24, 1943

October 15.

Reservation and passage to  
Charlottesville

✓ 4.83

October 18.

Lunch

✓ 0.50

Supper

✓ 0.70

Salem for lunch. Then went on to Jazewell where we refueled our memories on two sections. Collected good Tetradium from Gratton at North Jazewell and Anistworhyncha from the Murfreesboro. Had supper in Jazewell and then went on to Lebanon for the night.

October 19.

Saw section  $\frac{1}{2}$  to  $\frac{3}{4}$  mile ENE of Belfast Mill and on south side road. Section shows Wardell with Columnaria about 150 yards S of road and east of large brick house. Just below beds with Columnaria we found a large Schizanthus abundant. Section below Wardell not intelligible to me. Below Wardell are red beds 100'. Below these are 35-40' coarse sandstone of Benbolt. Then below are 30' buff weathering nodular beds of Benbolt (Zone 13). Below these are 20' granular ss. with large ones, probably Benbolt. Then a thin bed of ss. of Helderberg beds 150'. Considerable part of the 60' Ward Cove. Then top of Helderberg beds. Wardell about 250'.

H31A - Small washes in Lower P. House = Benbolt. Contained numerous brachiopods and a few graptolites. Collecting excellent. Beds occur just above Echinospirifer and are same zone as at H7A. This may be Upper Chambersburg.



H1A - Lehigham from Wandell 0.6 miles  
ENE of Belfast Mills about 150 yds S of  
road + east of brick house.

H2A - About 40' of Blackford with *Dimorphia*  
*Holdenii*, *Calliope* and a *Strophomena* at top.  
This locality on N side road opposite first  
house, ~~on~~ 3 mile east of Belfast Mills.  
H1A + H2A on Saltville D.

H3A - Elk Garden □, SW 1/2 S center sub-  
quadrant on loop 1/2 mile S of Rockwell on  
St. Hy. 80. Shaly Benbolt lower O'Hara  
with big *Mimella*, *Oxyplocia* etc.

H52A-1 - In bed of Moccasin Creek just N of  
bridge and about 25' above basal conglomerate  
of Middle Ordovician come and granular limestone  
with small *Rosticella* suggesting *Murchison* and  
type Lenoir. Along road east of bridge is a  
long sequence. First were seen *Mimella*, then  
came a zone of *Dimorphia* *Holdenii* with *Camerella*  
and large *Ophiura*. Whole is suggestive of  
Strasburg rather than Blackford: *Murchison*.  
This was followed by a bed with *Sowerbyites*,  
large *Dactylogonia*, *Dim. atavoides*. Above this  
a bed packed with *Dim. atavoides*.

Moll Creek □ at crossing of Co. Hy 67 ~~over~~  
Moccasin Creek, 1.6 miles east of junction  
with St Hy 74 = Co. Hy 613, and about 3/4 mile SSW of  
Jumbay.

Breakfast

Lunch

Supper

October 20.

Breakfast

Lodging (2 nights, Oct. 18, 19)

Supper

Lunch

✓ 0.50

✓ 0.42

✓ 1.00

✓ 0.50

✓ 5.00

✓ 1.40

0.30

~~Not on my record~~  
not 676

These little *phrynosomellids* were also seen by Cooper & Edmundson  
on Mendota sheet 1/3 mi WSW of Russell-Scott Co line paralleling NW-SE segment of Moccasin Cr on St Hy 74.



October 20. South slope of hill on which Hagan School stands, Hilton sheet.

Din. Transversa zone contains *Stroph. Tennesseeensis* and a *Campylotthis*. A peculiar *Resserella* was rare.

In *Echinoplacites* zone *Paleostrophomena* occurs. Cooper reports presence also of *Oligorhynchia* at this horizon. This locality called H 26 A.

H 7 A - Hilton □, 2 collections. 1. from slope of ventrout on west side hill east of secondary road 1/2 mile due west of Cedar Point ~~school~~. This was *Echinoplacites* zone with *Paleostrophomena* and other peculiar fossils. This is base of Cooper's Benbolt.

Higher (south) along old road at fork comes upper O'Hosee with large coarse-ribbed *Campylotthis*, *Spikuria* and *Hesperotthis*. At base is a cherty bed which separates Benbolt from Wardell. Upper O'Hosee is Wardell. At top come numerous corals, then the Bower sandy beds and the Moccasin.

H 30 - on old road about 0.1 mi S of house 1/2 mile SW of New Bethel Church is a reef in upper Wardell, a reef of *Stromatocium* and *Dystactospongia*. On E flank of reef occurs a layer abounding in *Columnaria*.

Took up *Coelospira nitens* author for Coq.  
" " *Orthorhynchula stovense*



1.40

.38

.50

2.00

3.80

1.40

5.00

1.50

.92

4.83

1.20

22.93

12.00

34.93

2.50

5.00

2.00

3.00

12.50



October 21. Went over to Edison in morning.  
zone of abundant *D. atavoides* is about  
5' vertical above the zone of abundant  
*Sowerbyites*. The latter genus also occurs  
in the zone of *D. atavoides*.

About 100' below the *Dinorthis* zone in  
field to east of highway fossils are fairly  
common & include a multiplicate *Camerala*  
like *C. elliptica*, *Hesperorthis*, *Mimella* and  
*Murina*. This horizon may be close to the  
*Murina* zone of Yellow Branch.  
Several *Marbles* occur in the Otisco  
here. They are reefs without a doubt.

Hotel at Kingsport	✓ 3.00
Breakfast	✓ 0.80
Lunch	
Supper (Morristown)	✓ 1.20

In the Thorn Hill section *Fascifera*  
underlies *Pionodema* (as it appears in  
*Cryptophagmites*). This is indicated by position  
as we saw *Fascifera* but not *Pionodema*.  
*Zygospira* indicates Witten.

Oct. 22.	
Hotel (Morristown)	✓ 2.00
Breakfast	✓ 0.50
Lunch	✓ 0.38

at bend  $\frac{1}{4}$  mile -  $\frac{1}{2}$  mi. East of Red Hill  
big development *Sowerbyites* beds, with  
*S. willardi*. H13

$\frac{1}{4}$  mi. E. Beech Grove Ch. occurs *Oligophylina*  
beds which are above the *Sowerbyites*. H12A

The *Sowerbyites* bed is above *S.*  
*interptatus* bed & this zone may be close  
to *Echinoplacites* zone farther north.

Supper Bristol	1.40
----------------	------

Hickell = Wardell



Moccasin

Witten

Bowen

Wardell

shaly

marble

sh. with  
Recess

marble

Lo House (Kenbolt) Sh with Dinorlandi

Clifffield

Mrs.



In Horn Hill section the lowest shale is called O'Hara. This is low O'Hara, possibly correlative with low beds of O'Hara seen farther east. This zone, I think is definitely above the Lowebyella-Dinastoides zone which was not seen in this section.

Chesney - not far east of Luttrell on Luttrell (TVA) Quad. On road just east of school and running across school grounds on south side is crumbly nodular limestone with Lowebyites and also Oligobrychia. This zone thus ties well with the Oligobrychia zone just west of Horn Hill and the Lowebyites zone of Red Hill. At latter place *Dinasthis willardi* is abundant with the Lowebyites.

October 23.

Hotel at Abingdon  
Breakfast "  
Lunch  
Supper

2.33

0.70

0.15

1.25

2.10

H15A - Burke's Garden  $\square$ , 1 mile SSE of Sharon Springs on St. Hy 42. and 1/2 mile due east of Red Oak School. High in Athens (125' below top). Contains *Echinospira*, *M. bursa*, *Orthis*, *Leptellina*. This I think is same bed called O'Hara by Butts but high Athens by me at Grayson Farm.

Travelled from Abingdon to Christiansburg via Ceres to see Devonian and Whitesburg. Christiansburg for the night.



8.00  
4.00

0.50  
8

0.50

2.00

60.00

0.50

0.50  
0.50

21

28.00

2.00

21.00

6.00

Don't R.R. 0.40  
4.65

Oct 18 0.50  
0.50

0.50  
0.50

0.50  
0.50

Oct 19 0.50  
0.50

0.50  
0.50

Oct 20 5.00 ✓ 0.30 ✓ 1.40 ✓  
Tel. Station

Oct 21 3.00 ✓ 0.80 ✓ 1.20 ✓  
Morgeston

Oct 22 2.50 ✓ 0.38 ✓ 1.90 ✓  
Morgeston

0.38  
0.38

2.33 ✓ 0.70 ✓ 1.25 ✓  
Abington

Oct 23 0.85 ✓ 1.84 ✓ 0.15 ✓  
Abington

0.85  
0.85

Oct 24 1.40 ✓ 4.83 ✓ 0.26 ✓  
38.78

4.83  
4.83

37.78 ✓ 1.22 ✓  
1.22

Sept 25 40

Diff. fare, road 38.78  
home on road



July 11.

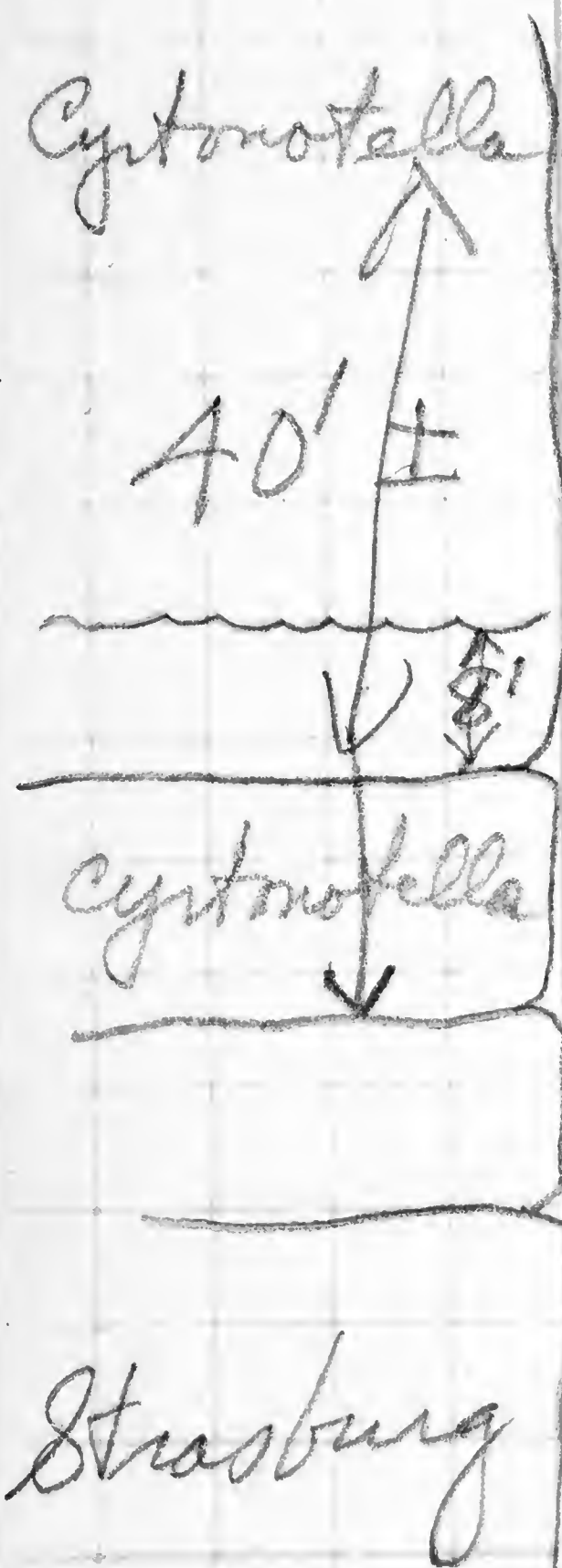
also section at St. Luke <sup>with Nidulites</sup>  
Christiania occurred in the  
interval usually assigned  
to the Greenesth. and in  
corresponding beds to those at  
Lamark Mills. That contained  
the Cryptophragmus.



0608



July 14  
 Breakf. .65, Lunch 0.40, Supper 2.00 Room  
 Strasburg Junction



A - Just above Lenoir are 10' of blue gray weathering, but black ls when fresh and suggesting Athens lithology

B - Approximately 9' granular coarse ls. with *Cytonotella* and abundant trilobites. Probably lower part of my silicified horizon.

C¹ - The next rock for over 100' is nodular, cobbly with shaly partings 5' in lower 40' or perhaps 60'. *Cytonotella* is common with many other types suggesting Whiteburg.

C² - Same as below. In all these beds *Chlamids* & *clotcloids* are abundant. At 8' from bottom of C *clotclous* is abundant, in fact these beds may be Butte's *clotclous* bed.

B. suggests the Whiteburg interval seen 2 mi S. of Harrisonburg  
 The Strasburg Junction



section is like that at Paulington where a thin Whitesburg overlies Lenoir and the Athens slope above or east of the Whitesburg produced *Ptychoglyptus* and *Phragmothiris* like the Strasburg Junction section. On July 12 we found several *Resserella* in the Whitesburg here. Also *Resserella* occurs in the granular beds of B.

We saw *Dimorphis* like *D. transversa* in Chambersburg in + for some distance above the Whitesburg interval

### Section on US 40 W of Hagerstown

Nodular beds with *Ectinosphaera* and for some 100 feet up, I think correlates with the Cornsorthin beds at Marion.

In this section at base occurs rock called Kay's Tiger-stripe which suggests Butt's Lenoir. This is subdivided in with Lewisville-type rock. Perhaps Lenoir gives way to Washburn type rock. This is followed by cobble, shaly rock, Shippensburg of Kay and this by *Nidulites*-bearing Chambersburg type rock.



July 13.

Lunch 10.45, Supper 1.50

Room &amp; nights Chambersburg

&amp; 2 breakfast 3.00

Visited Fort Loudon but section too poor to spend much time on it.

Section at St. Thomas good. Found Nidulites rudus Cryptophagmus. Stose reports Nidulites as abundant above Cryptophagmus but we were unable to affirm the point.

After visited Marion cut and worked in Stones River group until rained out. In measuring this section we started the mid-Ord. where the Dolomite ceased. But Stose & Bassler have 600' of alternating dolomite & limestone beneath Murchison. The latter was common in places. Brachiopods were abundant near the middle. The middle cherty zone was very distinctive.



00  
CQ



July 14 0612  
Lunch 0.50, Supper 0.95

In Marion cut Mercersburg  
limestone begins at top of  
cystid which is placed in  
the Shippensburg. The Greencastle  
occurs on the west side of the  
road-RR crossing. In this  
sequence the Makinides beds  
probably equal Ulrich's Strading  
and the up. Stones River  
could be Walcott, it had  
Tetradium in it and is over-  
lain by rocks with *T. cellulosa*.  
These were called Lowville but  
actually occur below the  
horizon of *Cryptophragma*.



July 15

Breakfast 0.65, Lunch 0.40, Supper 1.14  
 Room & nights included 2.00  $\frac{1}{4}$  mile  
 $1\frac{1}{2}$  mi. SW of Wadesville, S of  
 St. hy 274

M  
 Nidulites  
 in dark ls  
 100'  
 cobbly, weathering  
 Siltstone 35'  
 20' Chamber-  
 burg ls with  
 Nidulites

Homotelia is 100' below top  
 of Athens. Lenticulations of  
 Chamberburg type of rock  
 occur in Athens

Cryptophagnus was  
 found about 10'  $\pm$   
 below a silty bed with  
 Renssella.

Siltstone at top consists of

450' ls  
 Athens type  
 150' above  
 base of zone  
 of Echinospirites

Siltstone 3'  
 ls 16'  
 Siltstone 8' $\frac{1}{2}$ '  
 Bentonite 1' silica  $\frac{3}{4}$ "

60' Lenoir Renssella near top

Moaham  
 70'



$\frac{1}{2}$  mi SE of Rest, 0.4 mi  
S of W. Va line in Virginia  
 $\frac{1}{2}$  east of US 11 on Co. rd. 669

Chambersburg 400'  
Nidulites within 75' of top  
and down to 75' above base.  
Christiania at top.  
Nids + Lambrophyllum are  
middle 200'.

Echinospiriferites 25-50' above base  
Few intercalations of Athenstypa in lower 200'  
Lenoir 100' (Athenstypa seldom more than  
Mosheim 140' fine grained ls.  
Blue ls cobbly under Mosheim

1 mi N of intersection of 607 &  
St Hy 12, In big bend of Shenandoah  
R., Warren Co., Va.

Sh with ls intercal. (black)	118.
Lg + Sh	20
Black ls. + thin sh.	56
Shale thin ls. intercalation	14
Lenoir (granular, fine, cherty)	59'
Mosheim	5'



East side U.S. 11, at Van Cluse  
just N of old stone Qy, S. of  
Stephens City.

Martinsburg - sandy ls. with  
Christiania

25'

Chamberburg

575'

Nodular ls with  
ridges down to 75' of base and  
within 5 or 10' of Christiania bed.  
Lamellaophyllum abundant in mid of ridge

Siltstone

2' 2"

Lenoir

100'

Mosheim

135'

### Trumbling Run

Brachiopod beds are first  
nodular, shaly beds above  
siltstone and contain  
Oxoplesia, Christiania  
Sphenobryella Echinophaedusa (low)  
Dunorthis, Cornuella  
Was unable to identify coarse  
granular beds at base of  
nodular zone



July 16

Breakfast 0.65, Lunch 0.45 Supper 1.25  
 Room Woodstock 1.00

St. Croix Junction  
 Dimorphia a labridae, <sup>moderately</sup> and  
 Sowerbyites occur in RR cut  
 near point of V between  
 diverging tracks just W of  
 switch. They Dimorphia occur  
 with Girvanella in places.

In the ravine fully 100'  
 should be assigned to the  
 interval above the very  
 granular bed. The brachiopods  
 peter out about <sup>feet</sup>  
 then comes nodular limestone  
 with less shaly partings but  
 abounding in Trilobites &  
 Trilobite fragments. Dimorphia  
 occurs for 25' above the point  
 where brachiopods cease to  
 be abundant. A large  
 Comenotia occurred in the  
 top half of the brachiopod  
 (Cytonotella) beds.



Thomas Brook — 1/2 mile  
N. of Thomas Brook

This section is a duplication  
of The Jumbling Run section.  
In the nodular beds on the  
siltstone occur *Cyrtospira* and  
higher in section are *Dunorthis*  
+ *Cornuorthis* just below *Nichulites*.



July 17  
 Fayette / Mill Section  
 Breakfast 0.65, Lunch 0.50,  
 Supper 1.65, Lodging 8.00

A - Lenoir, black ls weathering  
 into thick slabs with irregular  
 surface. Chert not numerous  
 Weathers blue gray. Small  
*Sowerbyella* numerous,  
*Mimella*, *Multicostella*,  
*Ceramus*, *Nidulites* near top.

B - Cobble limestone with  
 shaly partings, *Homotelus*  
 abundant at base but  
 common throughout,  
*Resserella*, *Opikina* abundant  
 at top, *Resserella* throughout.  
*Conicostis* found here  
 on first visit, July 11.

*Echinospira* near base  
 C - *Nidulites* beds, cobble  
 limestone abounding in  
*Christiania* at base, *Nids*  
 throughout, *Lambeophyllum*  
 in upper half, *Strophomena*  
 near top with *Cryptophyllum*.  
 The Crypto bed had *Nid* on  
 adjacent block with it.

D. Coarse  
 granular ls with *Pionodonta*  
 at base and *Columnaria* at  
 top. Is contains much  
 vaughanite above lower  
 granular part. *Cryptophyllum*  
 in this zone on staidler place

granular  
 ls. +  
 vaughanite

cryptoph.

*Christiania*

*Opikina*-  
*Homotelus*

Lenoir

Mosheim



Strickler place  
 In Vanhauwite ls six  
 specimens of *Cryptophragma*  
 were found. 900' west of  
 house & 40' N of road. The  
 zone about 10' thick, occurs  
 about 30' below the base  
 of the Martinsburg, here dark  
 shaly, cobbley ls. with *Oxoplectra*  
*Eoplectrodonta*.

500' west of Lee Jackson Hotel,  
 New Market, Va. Doubtful  
*Cryptophragma* near top of  
 Chamberburg in block with  
*Nidulites*.



July 18

Room 1.50, Breakfast 0.85

Div A of  
Chambersburg  
Div B contains  
Sowerbyella

According to R.W. Cooper  
granular rocks in Tanom  
at Goodwin Ferry was  
called Halston by Raymond  
Sowerby it was found on  
top of granular beds in  
Cherty ls. See section Baader's  
Cement Resources of Va p. 198

At Stanton on Edge  
of City on abandoned  
Trenton line of Ches. & Western  
RR Tanom contains great  
reef of granular ls called  
Marat by RSB. Cherty ls  
occurs above & below the  
granular beds.

Cooper says that lithology  
of upper Chambersburg at  
Lantz Mills suggests Gratton  
but the coral Columnaria is  
only known from Wardell  
and probably the coral is a  
better means of correlation  
than the lithology. Thus top  
of Chambersburg here may  
be Wardell.



0621

1 mi W of Pasadena  
W Va

Edinburgh

N.M. 140' Laminated

Thistle  
Creek 30' Macbrides  
Unlaminated ls

Knox



UNITED STATES NATIONAL MUSEUM

Field Label

No. -----

FORMATION:

LOCALITY:

Collector:

Date:

Memoranda:

Note Book:

Page:



# Falling Waters Sect

Ed

NM 160'

W. Ark 60'

Calcareous

Knox



UNITED STATES NATIONAL MUSEUM

Field Label

No. -----

FORMATION:

LOCALITY:

Collector:

Date:

Note Book:

Page:

Memoranda:



Dip 45°

Map of Jefferson  
Berkeley & Morgan  
Cos W Va

D. P. Bransley 1916

graptolite  
sh.

Nealmont 2  
70 paces

70 paces

Nidulites

183 paces

granular

23 paces

{ 11 paces from top NM  
to siltstone 1'?

N

M

102  
paces

10 paces

Dolomite + ls.

Duncan River  
just N. of  
W Va line.  
1 mi SE of Ridgely

64



UNITED STATES NATIONAL MUSEUM

Field Label

No. -----

FORMATION:

LOCALITY:

Collector:

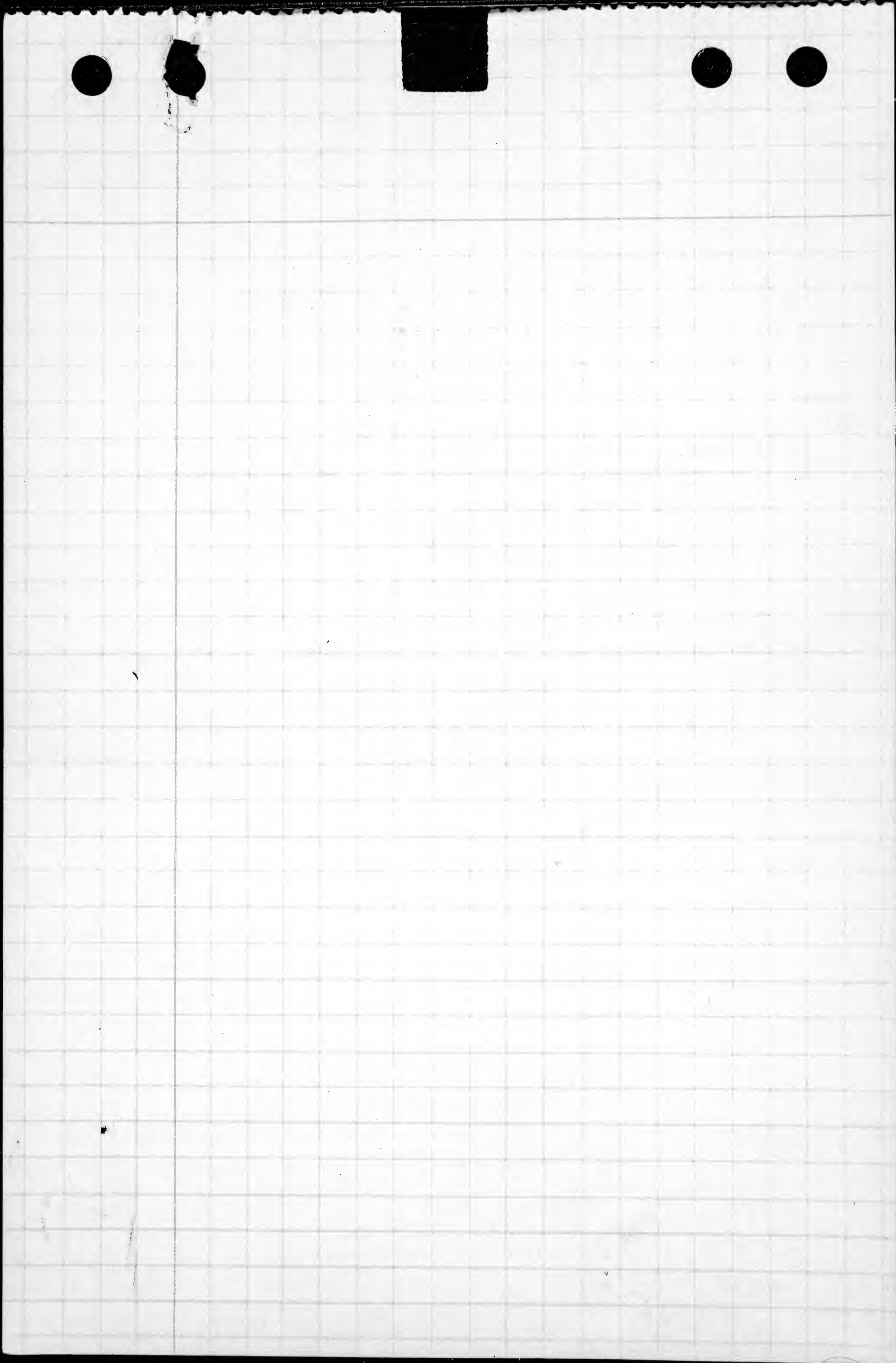
Date:

Memoranda:

Note Book:

Page:







0622

1944

October 20

R.R. fare Washington to Charlottesville 7.94  
and returnPullman (including tax .94, pullman .65, tax .10)  
on fare 1.10Supper 0.30  
Fare to R.R.

October 21

Lunch 0.40

Supper 1.00

First ~~stop~~ section visited was on US 11 about 1/2 mi SSW of Jumbling Run at Big bend in road. Nidulites beds occur in front of house. Between them and Oranda occurs ls. with numerous small Strophomena and Lambocoryphus. The Oranda is 25-30' thick and terminates in a bed with numerous brinites. It is followed by a coniferiform jointed layer BNC says looks like Eggleston.

Second stop is 0.4 mi W of Junction US 11 and Va 55 just north of Strasburg. Oranda well exposed, nearly vertical. Nidulites beds in field near side road are followed by sparsely fossiliferous massive and weathering blue grey mottled Camanoeladia ls. strongly suggesting the Menard of Lang. Oranda is very similar to that seen at first stop.

3rd stop at Hays Hill to collect shale with Reschella on roadside. This is well down in the Nidulites bed near its middle, probably in upper 100'.



5.80



October 22

V.

Lodging	0.85
Breakfast	1.00
Lunch	0.50
Supper	0.45
Lodging Winchester	1.10
Breakfast	1.00
Lunch	0.50
	0.40

Oct 23

Morning spent at Marion cut. Search for Dinorthis atavoides in beds just under Shippensburg in vain. Concluded all beds down to Lowville are Shippensburg. Searched cherty beds for Strasburg fossils. Found no unequivocal ones. Did find *Cam. longirostris* type suggesting Chazy. Mosheim at base continued *I. syngonotoides*. We think it possible that the Maclure beds are local to this section. Possibly they are lower Strasburg and that Lowville beds between the Shippensburg and Maclure beds are a facies of upper Strasburg.

In afternoon went to cut just west of Hagerstown, 7 miles. Here the beds just under Shippensburg contain *I. cellulosa*, small *Strophomena* and *Lepidodictya* just like the same beds at Marion. Below this Lowville are about 400' of limestone with *Ronail*-bearing Mosheim at base and peculiar buff gray smooth fracturing by int. shindle. No rock related to Strasburg was seen in this section.

Went to Pineburg to see section along RR. Went into large quarry on S side of RR and here found enormous sequence of Mosheim forming edge of quarry along river.



3

side. ~~But~~ We estimated about 300' of limestone below Shippensburg. Near middle a few beds with mottled appearance suggested Strasburg ls. but no fossils were seen to prove the point. There are two sections showing tremendous developments of corals types with only minor or no developments of Strasburg. The Strasburg may finger laterally into these big masses.

Oct. 23.

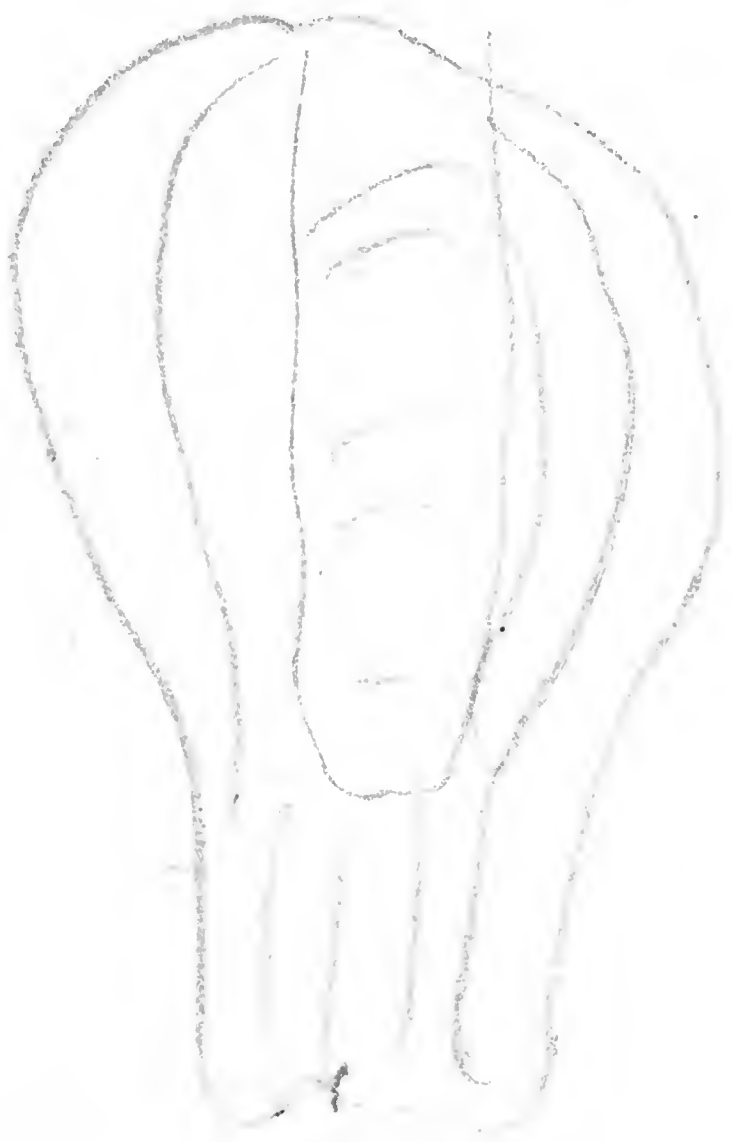
Supper (Harrisonburg)

0.85

First visit Riverton, near Front Royal. Mosheim about 30-50' and Lenoir of about 15-30' but big thickness of ~~the~~ Athens. At top occur coarse ss and sandy sh. with *Diplograptus* but also *Cryptolithus* which may represent a thinned representative of *Renssella* bed. This puts a good ceiling on the Athens.

About 1/2 mile S of Woods Fork on US 11. Take first road east, right next to a large quarry (Griffill Flint). Go east first horse. Then go north thru pasture gate. Oranda formation with limestone below, 200' of which contain *Cryptophragmus* at 3 or 4 levels. The lowest bed shows *Cryptophragmus* with *Midulites*. Oranda very fossiliferous.





150-  
175- *allus*



4

Last stop of day was at big bend of Shenandoah river where it turns close to US 11. Here about 1 mile north of the bridge at Edinburg is a dam. Big section including about 600' of Mosheim, 125' of Lenoir has cobbly, much chert, and many fossils. Above come 100' of cobbly black smooth, ashweathering ls with *Christiana* and many *Conionthis*. Above this, occur slabby Athens ls. beds, slabby with *Nidulites*. These mid beds are more like Athens than the mid beds to the north. ~~Above~~ The *Nidulites* beds are about 175' thick.

Next follow 100' of heavy bedded ls. with *Cryptophagus* common from base of top 50' to within 15' of top. *Cryptophagus* in granular and smooth ls, brachs in granular ls. Top of section is Oriskany sandy beds 30' thick with *Christiana*, *Leptellina*, *Oxyplocia*, *Renssella* and others.

The Lenoir in this section contains silicified bryozoa and *Tribbites* and is worthy of exploitation.

Oct. 22 - At Martinsburg on E side City Mid white beds of Chambers rest directly on the variegated beds of the Lenoir (Stones River) limestone or a sandy rock.



$$\begin{array}{r}
 4.50 \\
 21 \\
 \hline
 450 \\
 900 \\
 \hline
 21 \overline{) 94.50} \quad (4.5 \\
 84 \phantom{00} \\
 \hline
 105 \phantom{00} \\
 105 \phantom{00} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 175 \\
 250 \\
 \hline
 425
 \end{array}$$



Oct. 24.

5.

Look up Butts coll from  
Siltstone in Wadesville Coll.

See also colls. from below siltstone  
especially the Drionide.

Lunch

0.45

Supper (Marion, Va)

1.30

Lodging (Abingdon, Va.)

2.50

Went from Charlottesville to  
Abingdon, Va.

October 25

Breakfast

0.60

Lunch

0.60

Supper

1.25

Toll Bridge

0.35

Upper Lenoir at Knoxville may be  
Ottawa-like facies of Whiteburg.

Just W of Strawberry Plains occurred  
sections of Holston, Sevier, etc.

Left Abingdon about 8:00 AM and  
headed for Mosheim. Visited cut  
about 1-1 1/2 miles west of Mosheim  
on Southern RR. There are about  
60' of Mosheim resting directly on  
Knott dolomite. We saw no fossils  
or channels under the Mosheim. Cooper  
and Edmundson think this Mosheim  
has all the characters of the Virginia  
Mosheim. However we did not  
see any Tetradium in this forma-  
tion. Macbrides is fairly common  
in the Mosheim which may be



6 a facies of the Mosheim beds of the Lenoir. Above the Mosheim occur 45' of dark to light granular, shaly limestone suggesting Lenoir but we found no fossils that proved it. The granularity of the beds suggested Whitesburg to Cooper and Edmondson. I found what appeared to be a Glyptograptus.

Above the Lenoir or Whitesburg came graptolite shales with thin limestone lenses containing graptolites and also linguloids. Over the first low hill comes dolomite showing a fault to be present. We are not yet sure of the Lenoir age of the limestones above the Mosheim.

### Lenoir City.

Here shaly limestones with cobbly small sandstone and sandy shale rest directly on dolomite. The lower dolomite of about 5' thick looks like Mosheim but is thinner bedded occurring in layers about 8-10" thick. We agreed it was not Mosheim and that the Lenoir rests directly on dolomite. The basal Lenoir contains a small rhynchonellid in great abundance. Above this some 25' appeared Mosheim in abundance. The limestone contained many bryozoa and in some respects suggested the 45' at Mosheim but we saw no Mosheim above the Mosheim at that place. It is possible even the lowest Lenoir - Valerius rather than Crown Pt. down the small stream Lenoir was seen showing several hundred feet of this formation to be present.



Oct. 26.

7

Breakfast

0.50

Lunch

0.28

Supper

0.60

Visited sections on RR cut about 2 mi. NE of Athens courthouse. Exposures not good and mostly of leached sandy shell of a bright yellow to yellow-brown color. Exposures at RR-highway crossing at 948 consisted of shaly-calcareous shales with calcareous nodules. ~~Lenticular~~ is abundant. The rocks here suggested Whitesburg to me but the ls is not granular.

Second section seen is 2-3 miles SE of Charleston Tenn in Henniger Bluffs along Hiwassee River where river and highway come close together.

Lenoir-exposed at west end of exposures and consists of nodular limestone with calcareous shaly to sandy partings. We did not see the exact contact with the Knox and we saw no rhynchonellids at the base. The lower 30'-40' of nodular limestone contained small *Glyptothorax*, *Valcouria* and *Orthis* *truncatula* together with numerous bryozoa. The uppermost 20' of Lenoir are quite different from the lower nodular beds in being irregularly bedded somewhat calcareous silty rock with many *Christiana*.

Athens - consists of *Lepidodendron* and consists in lower part calcareous shales weathering to ash gray and having a dark gray color. We saw ~~no~~ black shale in the sequence. Lenticular layers and nodules occur but they are very poorly fossiliferous. They are



8 dark brown gray in color and with distinct grain. The very shaly part represents perhaps  $\frac{1}{3}$  of the total thickness below the Tellico. Above the thin-bedded shale the rock becomes sandier and heavy-bedded and near the top is a very fine-grained sandstone with fossils. In about the middle of the upper  $\frac{2}{3}$  occurred nodules with *Lonchodomas* abundant and like the rock seen in the railroad cut. At the top of the Athens are nodular shaly and granular beds suggesting O'Hara.

Tellico - Thick bed of calcarenites and red ss. with much ferruginous material.

Lenoir - Thin-bedded sandstone and calcareous sands looking very much like Martinsburg.

T-8 - About 5 miles SE of Sweetwater on Tenn 68 and  $\frac{1}{2}$  mile SE of Gaines school is a glade slope in upper Athens. *Lonchodomas* is common but also a few brachiopods suggesting the upper Lenoir at Friendsville.

Section one mile SW of Gaines school on Sweetwater [ ] shows nodular ls beds interbedded with yellow sandy shales that breaks into very small lumps. Here large *Sowerbyites* and *Christania* are abundant.

No *Maclurites* were seen in any of the Lenoir sequences seen on this day.



October 27

9

Breakfast

0.45

Lunch

0.40

Supper

1.15

Lodging (2 nights Athens)

5.00

" (2 nights (Oct 27-28, Athens))

2.00

Friends

Spent entire day at Friendsville. Came in on NW side of village and worked near white church just in front of cemetery on NW corner of town. On road opposite church and in woods just N of Church Knox dolomite occurs. Above a short covered interval comes a bed of red and green mottled limestone which Cooper thinks belongs to the red beds at the base of the Blackford. This is followed by another short covered interval, then comes Mosheim. Near NE these two beds appear in contact at the very NE corner of Friendsville where 4 houses occur in a row and just NW of a school. At this part of town Furmanella beds + Megabryozoa were seen not far above the Mosheim.

Following the Mosheim SW from the church in NW corner of town that limestone occurs on a slope just south of the church and is overlain by crystalline limestone. A few pieces of red limestone (Blackford) occurred below the Mosheim. Below the Mosheim and occupying the slope from the edge of the cemetery to the stream occur reef limestones with Stromatocium-like structures, numerous massive bryozoa and lime sand. In spots this has broken down and fossils are abundant: Plectopora, Dactylogonia were common. The whole layout suggests the Valeona reef at Copperville, N.Y. This material seems definitely to be below the Blackford.



10 and above Knox. It may be a swollen reef on the flanks of which *Washburn* occurs.

Along the creek from the mill upstream shaly limestone with *Oristramia* occurs. The *Oristramia* is abundant in the soil on both sides of the creek. The Lenoir becomes more cobbly upward to the top where it is very cobbly. In the top occur many fossils. *Plectambonites* and *Multicostella plana* occur about 75' below top. Large *Oristramia* occurs at the top.

Above the Lenoir is Holston marble, shaly near top with *Multicostella* (check with mine from 8 mi. WNW of London). Above Holston is Jellies and above Jellies is yellow sandy shale containing some marble beds and a specimen of *Campylodictya*. According to BNC this is Upper Ottersee. The *Campylodictya* was a biconvex type like some known in the Ottersee. Cooper (B.N.) suggests that the cobbly upper Lenoir may be equal to Farber Ottersee (possibly his Ward Cove, possibly the lowest *Echinospira* beds).

The top Lenoir suggests the high Athens seen on the road SE of Sweetwater on Oct. 26. It looks as though the Lenoir completely replaces the Athens and the point replaced would be about the middle.



October 28

Breakfast  
Lunch  
Supper

0.60

0.60

1.40

Section  $\frac{3}{4}$  mile NE of Friendville  
along spur into quarry and hill  
slopes to north

Cobbly ls. to top of Lenoir

Cobbly ls. with *Dactylogonia*, *Plectrothis*, *Sowerbyella*  
*Lonechodomas*, *Encrinurus* 25'

Cobbly, more shaly, <sup>1</sup>*Christiania*, <sup>2</sup>*Ateleasma*, <sup>3</sup>*Binnia*  
<sup>4</sup>*Paleostrophomena* (<sup>3</sup> & <sup>4</sup> at base, 1 all thru.) 80'

~~Athena like cobbly ls. with chert in~~  
~~upper half~~ *Lonechodomas* 50'

Covered (probably shaly ls.) 50'

Brown-watting impure ls. with corals 50'

Granular ls. with *Valcourea*, *Mimella*, *Amella* 30'

Coarse, crumbly calcarenites, dark gray 8'

Mudstone 30'

Holston at quarry abounds in  
*Multicostella*.

1.1 miles west of Friendville on north  
side road occurs exposure of the  
coral beds with *Platystrophia* and  
*Valcourea*. All beds below  
*Christiania*, I think, are definitely  
of Chazy age and like the  
*Pychoptenella* - *Dactylogonia*  
horizon in Oklahoma.

The *Valcourea* from the coral bed is  
undoubtedly the same as the free  
ones from 2 miles S of Philadelphia.



3.2 intersection } log of  
3.4 Top Moshine } road 3/-1  
3.68 Christiania } mile <sup>14</sup> NE  
4.01 Top Lenoir } of Friendsville



October 29

12

Breakfast

0.45

Lunch

0.35

Supper

1.20

Lodging (Knoxville)

2.00

Section N side US 11, 1 1/2 miles SW of Philadelphia

Quarry beds of crumbly shaly ls  
with *Machulites*, *Valcouria*, *Minella*  
*Hesperorthia*

30'-40'

Impure ls, thin granular partings  
with *Rosticellulus*

5'-10'

Mosheim-like lithology grading  
down and/or laterally into ash  
weathering lumpy - platy calcareous  
mud-rock - the two types ~~not~~ forming  
facies. No typical Mosheim

T25-26

10'

T27 - On E side road, 1 mile SW of  
Philadelphia occur ca. 100' of compact  
dense gray limestone with *Machulites*  
and *Ophiletes*. This is followed by  
Holston-like marble and shale. I think  
all this Lenoir is below *Christiana*.  
The shale had a small *Alyptorthia* &  
a graptolite. Chert in upper beds.  
These beds all sit below *Christiana*  
and correlated with cherty *Machulites*  
beds in section 3/4 mi NE of Maidsville

T-28 - Just off Penn 72 on loop 1/4  
mile S. of Marble Bluff. Chert of  
*D. holdenii* zone. Muffins above of  
Butts. and blocky chert zone of B. N.  
Cooper's Blackford formation.



13.

Lower Lenoir at Lenoir City —  
Measured along road by horses

- |    |   |        |
|----|---|--------|
| 5. | Crumbly shaly ls., gray fine grained <i>Machinella</i> , <i>Minella</i> | 25-30' |
| 4. | Buff gray weathering silty dolomite<br>Conchoidal fracture              | 30"    |
| 3  | Mostly covered but up 2' thin crumbly<br>Dolomitic shale                | 5'     |
| 2  | Earthy shaly. ash gray ls. with<br><i>Rostrocellula</i>                 | 18"    |
| 1. | Mosheim type, drab gray wavy bed, snails<br>Dolomite                    | 4'     |

Section in old quarry near Creek  
Crumbly shaly ls. with *Machinella* 25-30'  
Thin silty "dolomite" (possibly silty, 30"  
Shaly drab gray dolomite) 6'  
*Rostrocellula* bed. (T-28) 2-4"  
Mosheim type 9'

Total thickness of Lenoir as indicated  
along strike from Lenoir City to  
Concord is in the neighborhood of  
150'.

Cooper & Edmondson agree that  
Mosheim at Mosheim is not  
necessarily the same as the



14

Mosheim-like beds at Philadelphia and Lenoir City. The beds at the two places do not look alike. At Philadelphia the Mosheim was not a continuous deposit but the Mosheim lithology was spottily appearing in earthy calcareous, shaly weathering beds. The presence of *Murchisonites* links the type Mosheim to the lower Lenoir.

Type Lenoir from what we have seen seems to consist of about 150' from top down as follows:

Firm fine grained gray limestone with *Murchisonites* and shert in the upper part. - - - - - 75-100'

Shaly limestone crumbling into small cobbles with *Valcouria*, *Hesperonthis*, *Mimella*, sponges and corals - - - - - 30-40'

Dolomitic shaly weathering earthy rock with masses or layers of Mosheim-like rock and granular layers and masses with snails and *Retriacella* - - 10'

This is the type Lenoir and seems to be represented in Friendville by "Mosheim" shaly beds with *Valcouria* and corals, firm, Athens like limestone becoming earthy at top. This entire sequence extends up to Christiania but does not include it.

Check "Holston" from Jeff City and that Bridge collected at Mosheim level.



15

October 30

Breakfast  
Lunch  
Supper

0.60

0.60

0.75

Flint Ridge on US 25 W, 4.7 miles SSE of Clinton, Beckmantown with 2' chert zone overlain by granular, gray ls. with red chert, followed by ash gray shale. Above this is blocky chert zone with numerous *Dinorthis holdeni*, *Lepidaria*, *Calliops*. Followed by mealy red ss. The *Dinorthis* zone is also underlain by mealy red rock.

Heiskel - NW of Heiskel. The Knox is exposed about  $\frac{1}{2}$  mile along the road just S of the bend. Then follows blocky chert, red and yellow shale. Just before reaching the intersection dark gray limestones may be seen in the bed of a brook by the road. These are cherty and resemble the Strassburg of Valin lithology. They also contain numerous bryozoa. Above these and exposed along the main road at Heiskel are nodular shaly ls., yellow weathering that contain *Strophomena tennesseensis*. To the southeast a long section is visible. Just under the school, cherty limestones appear. Between the school and the brook, platy limestones with some shaly limestone occurs which contain snails, *Opelina* and a few other fossils. Just about opposite the first house on the west side of the road and slight forward the school occurs ledges with



16

Cryptophagmites. Across the brook in the bluff occurs thin-bedded limestones with shaly partings and abounding in *Rostrellula* and *Bygonia*. *Opilites* is also present. Above the Rhynchonellid beds occur massive reds.

Along next NW road to the NE the blocky chert, red, meaty rocks, Lincolnshire-like limestone and Otsego lithology occurs.

Old Road extending NW for  $\frac{1}{2}$  mile and located  $\frac{1}{2}$  mile SW of Pearson Mill showed a wonderful section. The blocky chert occurs 245 paces NW of house and is overlain by red shaly rock. 132 paces SE from first stream & road crossing occur *Oligorhynchus* in a thin bed. *Mimella* is also present. This bed is located about 475 feet NW of the house. The *Oligorhynchus* bed is interbedded in yellow shale that in turn is interbedded between layers of the meaty red rock. Also interbedded in the red are layers of hard fine-grained sandstone, and calcareous shale, the latter with many *Strophomena* (suggesting meaburyi). In the sandstones occurred *Worthenella willardi* and a possible *Sowerbyites*. Following these beds and on the south side of the small creek near the house occur the cherty, dark limestones with *Bygonia*. At the intersection of the old road and main NESW road and for 25 yards NW occur cobble shale and limestone with lower Otsego fossils. According to Cooper (B.N.) this is the real lower Otsego. The *Sowerbyites* beds are not Otsego at all.



17.

and this is proved at the locality north of Fountain City.

One mile SW of Mayer Chapel on the Fountain City sheet on the north side of the dirt road and on the slopes down to the creek occur dark limestones interbedded with occasional layers of yellow calcareous shale. *Dinorthis willardi* is abundant and occurs with a large *Camarella*. On the flat on the SE side of the road calcareous shale abounds in fossils: *Sowerbyites*, *Campylorthis*, *Mimella*, *Oligorhynchia* and *Dinorthis willardi*. These fossils are the same as those seen in Raccoon Valley, Liberty Hill, and just SW of Thorn Hill. They had been called lower O Horse but Ulrich thought them to be Strasburg. They seem to be a shaly equivalent of the Strasburg. The latter formation traced SW to Edison was followed with ease but we lost it between Edison and Thorn Hill. The probable explanation is that it changed to shale and has a different fauna in it.

Overlying these shaly beds in Beaver Valley occur dark cherty limestone abounding in *Nidulites*. This is B.N. Cooper's Ward Cove formation and clinches the Strasburg = Lincolnshire position of the so-called lower O Horse beds = Thorn Hill form.



October 31

18 Breakfast 0.45  
 Lodging (Kingsmeyer Hotel, Monistown) 2.50  
 Lunch 0.20  
 Supper 1.50

Morning visited type section of Whitesburg 2 mi. SE of Whitesburg. There some rock at the base has somewhat the appearance of the Mosheim but the section is mostly crumbly nodular ls with many *Trachyites*. Also present are large *Rafinesquina*, *Valcouria*, etc. In the upper third the rock is somewhat brown weathering and has some sponges.

The Whitesburg overlies the Lenoir and is a smooth dark gray or granular dark gray limestone abounding in *Favosites*. *Ampyxina* was seen at the base, also big *Conotrachea*, *Opikina*. Near the top of the sequence the rock is very cobbly, breaking into small lumps. In this condition it resembles the Chambersburg.

Visited the RR cut at Otas but saw nothing new.

Went on to Rogersville and from there to Horn Hill. At base of section is a thick Mosheim which is overlain by Holston lithology. Where the bridge occurs at the bend, cobbly, shaly ls occurs with *Cystids* and *Dinorthis willardi*. We now believe this to belong to the Strasburg and that it is definitely not Otosee. Above this is a marble and then another shaly interval with *receptaculites* which Cooper believes is his lower Otosee. This is followed by a third marble and then corals of his Wardell formation appear.



19.

After seeing The Horn Hill section we went down to Washburn and then over to Liberty Hill. At the bend of the road just before reaching the west end of the village occur Up. Otsee. Lower Otsee appears on the east side of the village along the highway about  $\frac{3}{4}$  mile. Here also occurred below the Otsee cherty ls. of the Lincolnshire.

We returned to Horn Hill and spent a short time at a cursory examination of the Evans Ferry section. At the base occurs a Madison lithology which is followed by red green spotted rock and this is succeeded by cherty limestone with *Mimella* and *Dinorthis holdeni*. This is followed by dark gray limestone with more scattered chert and big *dinorthis*. Above this, just below the side road, occur cobbly shaly, yellow limestone with *Strophomena megalis*, *Dinorthis willardi* and *Multicostella* (or *Campylorthis*). This horizon is not the Otsee but is the Strasburg as Ulrich contended. This is followed by a marble and then comes lower Otsee with *Receptaculites*.

The Upper Otsee occurs by the large white house and consists of cobbly ls. and heavy beds of limestone with *Camarilla*, *Hesperorthis* and *Campylorthis*. Around the bend to the south of the big white house is the so-called ~~the~~ Lowville or Witten of Cooper (C.N.)



November 1.

20

In Raymond & Willard's book  
 Otsee at base of shale above  
 lowest marble quarry N. of  
 Luttrell = Strasburg shale  
*Petrocrania cucatridula*  
*Rafinesquina duplicistriata*  
*Schizanthus cuneatus*  
*Dinorthis atavides* must be  
 reexamined. Willard's figured  
 specimen looks most like  
 the species I am calling *D.*  
*willardi*.

Between 2nd & 3rd marbles near  
 Chesney = Lower Otsee  
*Hebertella melonica*



0642

21

O'Hare - Liberty Hill, N of Luttrell  
*Dalmanella trogata*  
*Plaesiomys elongata*

O'Hare at Fugates = Benbolt + Wardell  
*Plaesiomys brevis*  
*Dinorthis quadruplicata*  
*D. transversa*  
*Pionodema globosa*  
*Strophomena tennesseensis*  
*S. inapertosa*  
*Camalotectia quadruplicata*



22

See collection from Lowville of  
Slattown, Russell Co. Va. in  
Butts coll.

Curdsville  
Eggleston

Hagan section on Rose Hill  
ground.

Beatonville  
Witten-like  
Tyrona  
Zygospira

Lenoir, Catawba Valley = Athens

-T42 November 1

Breakfast

0.60

Lunch

0.50

Supper

1.45

Moccasin  
Pionoceras  
Nealmont of K  
Camaroia  
Cryptophagus  
Witten  
Strophomena  
Heoparaffin  
Stromatolite

-T41 U.S.  
Along 58 east of Cumberland  
Gap the Lowville we collected  
from is Witten. ~~The Phillips~~  
~~had see Moccasin~~

Portion of  
Beatonville  
Lowville  
Lithology

Vaughanite with thin red ls.

Cherty  
Lowville type  
Real Moccasin  
type

Tetradium cellulosum along E leg of Y

= Perry-multicostella (Campylodonta) snails =  
Murfreesboro

Lowville  
type  
Ropey-modela  
chert

Top at prong of Y  
on RR.

Mosheim type

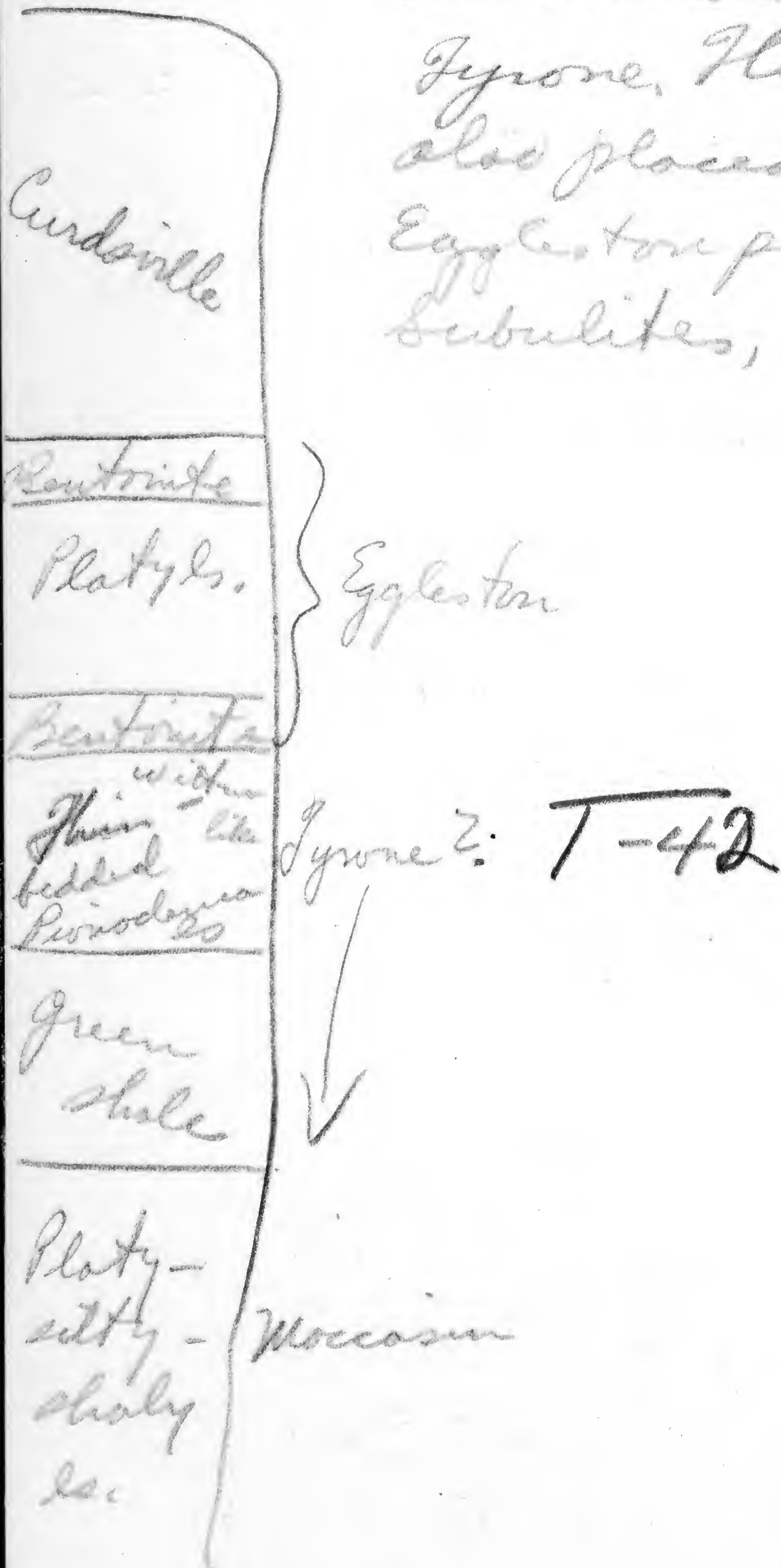
X-T-40  
Blackford

-T40 Over

Lodging (2 nights Cumberland Gap) 4.00



At upper end of section ~~is~~  
 at water tower occurs Curdsville  
 Under this is a 3 foot Bentonite, then calcareous  
 sandstone (30-35') bounded below by  
 another thick (2') Bentonite. This interval  
 is said to be Eggleston. Below this  
 is thin platy fossiliferous ls. abounding  
 in *Pionodonta* and said to be  
 Tyronne. The green shale is  
 also placed in this interval. The  
 Eggleston produced few fossils:  
*Subulites*, *Strophomena*.





23

Yellow Branch section - lower portion seems to be definitely related to the Blackford. The contact with One Knave is just N of the side road to the west that goes down to a house in the valley. The top of the Blackford is about at the 8' marble that yielded my fossils. The upper part of the sequence is in cherty granular ls. The 8' marble lies under Mosheim-like rock. No typical Mosheim here.

Section at quarry about 1/4 mile S of V 58 on Statins Creek, 2 miles out Stravat road 1/2 to Corp east of Cumberland Gap, west edge of Wheeler T, Va.

Stromatocium bed 80' stratig, above red bed at Ay to S. toward RR.

Crumbly thin-bedded gray ls. shaly at base

Hesperomthis and Opikina ----- 4'

Dark gray ls, Stromatocium <sup>Protorhyncha</sup> & Tetradium -- 10'

Dove gray vanhookite, Tetradium, Protorhyncha - 2 1/2'

Jaune gray vanhookite, J. cellulosum -- 6'

Massive ls, shaly partings, armed cracks at base

9'

The Opikina sibs suggested Ridley and the Protorhyncha check it. This is the upper Wardell of Cooper & the Hesperomthis zone at Rye Cove

Important feature in this 80' is occurrence of Proto-  
rhyncha and Tetradium  
cellulosum.



# Section at Hagan

Up. Bentonite	3'	
Chiefly arg. gray ls.	36'	
Lower Bentonite	2'	
Dove ls. (Pronodina)	38'	
Green gray ls	61'	Dove gray calcilutite 33'
Bentonite	1'	
Green shale	12'	
Muscovite	345'	yellow weathering mud rock
Chert zone	63'	Pronodina at top.
Ammonocharia	127'	Cryptophagus
Basal Witten	35'	Tetradium   Top of Wardell
Chert zone dark ls.	5'	Stromatolites
Shaly zone <u>vaughanite</u>	82'	probably gy horizon <sup>Tetradium</sup>
Calcilutite	36'	
Red bed.	2'	
Vaughanite	11'	
First red bed	3'	
Slabby vaughanite	200'	Tetradium cellulosum
Covered	60'	
Cherty Lenoir ls	59'	Murchisonia fossils
Mosheim vaughanite	65'	
Granular cherty ls	98'	= Butts Lenoir = Cooper
Arg. calcilutite	35'	
Blackford	143'	ls. + dolomite



0645

November 2.

24

Breakfast

0.60

Lunch

0.50

Supper

0.75

Eggleston includes the green shale,  
thin-bedded ls and two bentonites  
plus about 5' above top Bentonite  
The Pholidops is in lower Ludville

Returned to Hogan section with  
Ralph Miller. Collected *Fasciella*  
and *Protolyncha* in and below  
*Stromatocium*, also saw  
*Hebertella* above *Stromatocium*.  
Collected in cuts along US 58  
but collected few fossils.



25

November 3

Visited Rye Cove, section going N from  
 Δ intersection near school shows a  
 good Blackford sequence at the base  
 in which B. H. Berger collected *Dinorthis*  
*holdeni*. The Ward Cove is present with  
*Nidulites* and also an *Oxoplocia* like *O.*  
*holdeni*. Possibly same as at Fountain  
 City. Above Ward Cove comes the Barbolt  
 lime a shaly ls. and the lower Ottersee of  
 Barth. This contains the large *Rafinesquina*,  
*Strophomena* and *Platystrophia*. It is  
 the horizon at the Birch Church.  
 Collecting from all the Ottersee beds  
 was very poor. The Wardell or upper  
 Ottersee is not separable from the Barbolt  
 but is present at Carvers Run. This  
 is closely associated with *Stromatoceras*.  
 Above it were found large *Opikina*  
 very much like *O. iniqua*.

In afternoon visited section at  
 Mannville school on east side  
 Clinchport Road. The section is in  
 Wardell at the school.



Alabama

Lemay  
up. Lenoir



Little Oak

Athens Black shale

Whitcomb  
Scaphognathus + Christina  
Lenoir

Scaphognathus + Christina

Lenoir

Knox

Knox

up. Lenoir

Chamberlain

2

Christ.

Athens  
Whitcomb  
Lenoir

L. Lenoir

Knox



0647

November 3

26

Breakfast

0.60

Lunch

0.35

~~Supper~~

Fodging (Big Stone Gap).

2.00

The Porterfield quarry reefs may = the Strasburg in a greatly changed facies. The Upper Lenoir at Knoxville may be the cobbly (Chambersburg) facies of the

Nov. 4

Lunch

0.45

2 Keys

0.20

Sent Coop. Eaton's paper on By-passing.

Nails + tags for keys

0.25

Went to Fugates hill section where a long sequence is exposed along the road to Mandota over Clinch Mtn. Collecting very poor in Otsego.

Returned to Tumbey and here found Red beds of Blackford overlain by limestones with the Blocky chert. These contained also many *Micnella*. Above came ls. with *Sordabijites* and then ls. with *Dunorthia altavides*. No typical Lenoir was seen but the upper part of the Blocky chert zone.



Rye Cove



27

is somewhat shaly and crumbly and suggests the Lenoir lithology. So far it seems as though the Lenoir is represented by the red beds of the Blackford.

In afternoon collected near Hansonville but found the collecting very poor. At Green Valley Church crumbly ls for some 20' yields large *Epikima*. These beds suggest a transition to Ward Cove type of rock but Cooper insists these beds are Bentolt.

In conversation in the evening Cooper held entire range of Oxoplecia to = Lower Echinophacites and to = Shippensburg.

Otosee	<i>Epikima</i> , <i>D. transversa</i> , <i>Oxoplecia</i>	Lower Echino- sphaerites
Athens	<i>Oxoplecia</i> , <i>Epikima</i> , <i>Leptellina</i>	
	Whitesburg	

Nodular facies	{	Bentolt - <i>D. transversa</i>	<i>Oxoplecia</i>
		Echinophacites	
		Peery Ward Cove	



November 5

28

Lodging (Lebanon, 2 nights)	4.00
Supper (Oct. 3)	✓ 1.00
Breakfast (Oct. 4)	✓ 0.50
Supper (Oct. 4)	✓ 1.00
Breakfast (Oct. 5)	0.60
Lunch " "	0.15
Supper " "	1.60

Spent morning at Portfield quarry. Cooper claims the so-called Lebanon is actually Lincolnshire. The Holston is believed to be Ward Cove.

On yellow Branch about 3 miles west of Meadow View and 500 feet downstream from the junction of Co. Hy. 745 and Va 80. The section is along Va. 80. Above the Beepmantown occurs coarse ss followed by red sandy limestone. This limestone and the sandy limestone up to the road to the barn, perhaps 40' of limestone with *Porosticella* *Michella*. Above this are 8-10' of sandy dolomite then 20' of sheared ls. with many snails including *Macclurella*. On this is a band of dolomite after a covered interval. Then comes a vanhamite, sheared, but with many snails.



29

The vangharite is followed by dolomite and magnesian limestone. The upper part of the section is much sheared light blue gray ls. This was called Lincolnshire by Cooper but he is not sure of it. The Mosheim may be 5-Oaks. The lower beds from the Gastropod (maclurei) zone down to the Buckmantown seems definitely to be Lenoir. The upper limestone contained no chert.

Here the vangharite seems to belong rather to the lower than to the 5-Oaks beds & may be Lenoir.

The lowerbyella (small) seems to link the Lenoir at Postfield to the Lincolnshire, & it certainly would make it post-chazy.



November 6

30

The Christiania beds at Athens & Riceville must be at base of Upper Lenoir (Christiania Zone) of Friendsville.

We agree that the Upper Lenoir at Friendsville equals all the Athens at Charleston and Athens. In other words the Christiania beds above the Lenoir at Charleston plus the shale and nodular beds equals the Christiania zone at Friendsville. These two sequences are equal to the Whiteburg. The Strassburg may be equivalent to the few cherty beds at the top of the lower Lenoir. The coral beds thus would be the top of the Lenoir.

Marion Ory

35± yellow shaly, knotty ls. }  
with Knoxville fossils } Whiteburg

8' Knotty solid ls. with nautilites

Mosheim 35'(ca)

Knox



31

590

2.72

3.12 miles

on US 11 from  
counthouse in  
Marion = T 75

Athens shale

Knobby  
shaly  
lslike up  
Lenoir  
in quarry  
above

225'

Dense ls., gray with  
75- Machinates in lower 25'  
shown in gg.

3

25' Coarse granular calcarenite  
some reddish, abundant pebbles  
chert + quartz - Rosticellula etc.

2

Calcarenite with ~~pebbles~~  
in upper part, light gray -  
pinkish, occasional chert pebbles 12'

1

Partly covered to dolomite

Coarse calcarenite 25'



3/4 mi N of Area Ceres

Martinsburg.

25' Moreasin

Witten, Wardell out

Bembolt 125'

Opikina; Minella

Lophospira (Perry)

Ward  
Cove

~~300'~~ Knotty Chambersburg-like rock,

Nidulites, Echinospira, cup coral

300' Ward Cove lithology, athena  
in position

Calcarenytes (McNitt) 35'

Lincolndine coarse grained ls.  
intercalated with cherty ls.

Mosheim 20'

Blackford 2-3'

Knotty ls. = Lenoir 55? 15-20'

Reno



32

State Highway #2 from Eggleston  
to Newport - very scenic.

Junction of Va. hwy. 100 and #2  
at Staffordville Contact of  
Blackford just S of Bridge over  
Walker Creek. Lowest beds a  
conglomerate followed by dolomitic  
rock with *Camunella* and *bygonia*.  
Over this is a sh. gray shale and  
blocky chert, often interbedded.  
This is followed by about 175'  
of *Trinobolus* with *Duorthus*.  
Above this is Ward Cove with  
a Chambersburg lithology and  
containing *Nidulites pififormis*.

Upstream along N + W RR along  
New River 1/2 mile upstream  
from Barton Sta, on Beckmantown  
are 90' calcarenites overlain  
by 100' of *Trinobolus* with  
*Duorthus* & *Sowerbyites*.

Breakfast	0.60
Lunch	0.15
supper (Christiansburg)	1.50
Lodging (Marion, Va)	2.25



November 7

33

Breakfast

0.70

Lunch

0.45

Supper

1.60

Lodging (Natural Bridge)

2.50

1/2 mi S of Denmark Church on  
a (east) branch of Purgatoire  
Creek.

Martinsburg

75'

Martinsburg?

Zygospira  
oboloides

Cyclonema

Pinothius

Transverse

Athena

Echinospira

40-50'

Whiteburg

Echinospira

200'

±

Strasburg

Sowerbyite

Mosheim (thin)



34 3/4 mi NW of Rocky Point, Va  
for unusual Lingulid. Basal  
beds of New Market (Blackford)

Athena Junction Co 675 and Va 257  
at crossing of Buffalo Creek,

Market 125 Coarse calcarenite, light gray, many  
bryozoa

Lincolnshire Cherty blue gray weathering  
dark ls. Report this 120'

Mosheim 30' (some chert)

Knox



November 8.

35

Breakfast

0.60

Lunch

0.45

~~Supper~~

1.50

Lodging (Stamton)

3.00

Went east of Lexington to examine Chambersburg. Found no lithology referable to Chambersburg. It is all of Athens type. Discovered two infolded masses of Martinsburg that may be the reason for the great thickness of Athens at Lexington.

Went to Whistle Creek, NW of Lexington. Lincolnshire chert is overlain by Murat light gray calcarenite with few brachiopods. Whitesburg brown-weathering, hard knotty ls. with dark sandy shale parting 5 and some chert, overlies the Murat and is followed by Athens.



0657

November 9

36

Breakfast  
Lunch

0.60

0.55

Supper

1.55

Lodging (2 nights Harrison)

3.00

My specimens of *Conotrachelus* (Schubert)  
from Lacey Springs are from  
Lower Athens. About  $\frac{3}{4}$  mi.  
NE of Melrose cavern. It is  
about  $1\frac{1}{2}$  - 2 mi. SW of Lacey Spr.  
on U.S. 11.

Junction Va 263 + Co 710 at Grandtorage  
5.05

Base of up. granular 5.09

U.S. 11 at Mt. Jackson 7.75

Cedar Grove Church 11.28 =

3.53 miles S of

Cedar Mt. Jackson on Co 616.

N 79° W

Co. Hy 616 + U.S. 11 - 71.75

To the Lenoir

71.85

71.78

72.20

72.10

.72



0658

37

Nov 10  
Send BHC a copy of  
International Rules of  
Nomenclature.

Breakfast  
Lunch

0.60  
0.20

According to Cooper Kay's  
Tiger-stripe is Blackford.  
The overlying conglomerate is  
5-Oaks.

Change 4 miles E of Harrison  
on US 33 to

Between Peales X-road & Run  
Laird, N of Cut Run on US 33,  
5 miles SE of Harrisonburg



41.27  
42.10  
1.95

85.32

120  
85.32

34.68  
30

34.38

Handwritten notes and a diagram. The diagram shows a series of connected points forming a path. To the right of the diagram, there is a vertical line with the text "No. 1" and "No. 2" written next to it. Below this, there is a horizontal line with the text "North" written below it. The notes are written in a cursive script.



Va, Ga, Tenn, Ala  
1945

1947



September 25 - Purchase \$5.50 in Travelers  
cheques 4.13

Car I 7768

October 1. Mileage when car was taken  
56904.

Change oil, grease car SVI 2.75  
Mileage 56998.

2 blocks of Cybelviden to etch from  
N of Edinburg.

Lunch Woodstock, Va 1.15

SVZ Gas 9 gals Staunton (57074) 2.16  
Supper 2.45

Drove from Washington to Strasburg  
Left Wash. at 7:45 arrived Strasburg  
10:15. Had car greased and  
headed for Woodstock. Met Carl  
Dunbar on highway and Cooper  
at Woodstock, at 11:50. Took  
Wang to Hupp Hill where we saw  
Lambecophyllym and Platycystites  
just below top of hill.

Lunched at Woodstock and  
then went to Bowman Farm. From  
there went on to locality opposite  
dam on Shenandoah River. Here  
we saw "Mosheim" with dark  
granular fingers of "Tenois". This  
is followed by Tenois with  
Dinorthis atavoides and Sowerbyella



②

in lower part of the middle. Above this in top of middle Lenoir occur *Cybeloides* in some abundance. We took two

blocks for etching. Lenoir is followed by a granular ls. said by Bette to be Whitesburg.

The Chambersburg comes in with *Renssella* and *Conionthis*. This zone we traced clear up to Marion, Pa. where the *Conionthis* lies over the *Tetradium cellulosum* beds of Towville of Stone.

This puts the *Egyptophragmus* way above the Towville.

A *Nidulites* was found loose that must have come from Lenoir or basal Chambersburg, both unusual occurrences.

Whistle creek may interfinger with Mosheim type rock.

Oct. 2

1.25  
0.95  
2.20  
4.40

Breakfast

1.25

Room &amp; garage Nat. Bridge SV3

4.50

Mileage 57122

Lunch Blacksburg, Va

0.95

Gas Pearisburg Va 11 gals

2.43

57245

SV 4

Supper Bluefield, W. Va

2.20

From Natural Bridge through the narrows to Bluefield for the night. Section at Narrows showed



150  
105



(3)

Musheim type limestone overlain  
by calcarenite sandwiched  
between the Ticolushine and  
blechy chert.

Oct. 3. Breakfast Bluefield — ~~1.24~~  
 Total 1 night " — SV5 ~~5.10~~  
 Car storage ~~0.77~~  
 Gas Lebanon Va, 7 gal. (SV6) 1.53  
 Mileage 57367  
 Supper Big Stone Gap ~~1.75~~  
 Lunch ~~0.70~~

1.24  
 1.75  
 0.70  
 3.74

Left Bluefield for Fagerwell, Va  
 where we saw one locality  
 in Witten, then went on to the  
 Tumber section. From Tumber  
 went to Hagan School section  
 and made a short stop at beds  
 just east of Cedar Point School.  
 From there went on to Gate City  
 and Big Stone Gap.

October 4.

Hotel Big Stone Gap ~~3.00~~  
 Breakfast ~~1.20~~  
 SV7 Gas Middleboro, Ky. (57493) ~~2.10~~  
 Lodging, Middleboro Ky. SV8 4.00  
 Supper " " ~~3.10~~

1.20  
 3.10

Visited Hagan section and  
 quarry on Station Creek.



④

October 5

1.20  
1.10  
2.35  
4.65

Breakfast, Middleboro, Ky ~~1.20~~  
Bus, Crossville (57640) ~~2.44~~  
Lunch ~~1.10~~  
Supper ~~2.35~~  
Arrived Murfreesboro at 5:30 PM

Oct 6

Walter Hill

(50)  
A - 4" dove ls. with bygonia  
B - 4-6" granular shell breccia  
C - 5' thin bedded ls. with  
numerous fossils Protozyga,  
Murella a, Opikina, Strophomena  
Glyptorthis Plates up to 4" thick  
Often granular coarse  
D - Thin bedded dove ls.  
weathering ashy gray. Fossils  
scarce

Cover

Protozyga

d

C

B

A

Murf.



The Ridley above the Pierce  
 is very heavy bedded ls. about  
 35-40' thick. Lower beds  
 crowded with a small *Optunia*  
 and also *Cameralia*. Upper  
 beds here with *Zonoceras*  
 and *Endoceras*, also *Maclurites*.  
 The rock is brownish gray  
 with *Camerocladia*-like  
 or worm markings which  
 weather yellowish. Ridley  
 weathers ash-gray. *Stromato-*  
*cerium* in small heads, often  
 upside down. Cooper likens  
 this Ridley section to Upper  
 cherty Beurbolt. *Dystactospongia*  
 is fairly common.

1/2 mile East of Readyville on  
 US 70S. On road at bend  
 granular, massive layer  
 with *Cryptophagnus*. This  
 bed occurs on hillside 150 yds  
 south of highway. ~~Bed~~ *Crypto-*  
*phagnus* bed about 3' thick.  
 Above *Cryptophagnus* occurs  
 platy ls. with abundant  
*Leontocyella*. 20' above  
*Cryptophagnus* comes the  
 double bedded bed, the same  
 as at Fairview Station at  
 Rome. About 25' of platy  
 ls. with *Camerocladia* occurs



below *Cryptophagnus*  
Oct. 6

Breakfast

1.20

Lunch

1.10

Car repair

9.00

Supper

2.40

1.20

1.10

2.40

4.70

*Lowerbyella* is very abundant  
just above *Cryptophagnus*

0.8 mi. East of Leadville at  
junction with Clint road saw a  
section of Carters showing  
about 65' of rock. Lower beds  
massive and with *Tetradium*  
*cellulosum*. A Bentonite comes  
30-35' below top and under it  
we saw *Strophomena*, *Staptelasma*,  
*Zygospira*.

Above the Bentonite the beds  
are more thin-bedded and  
varied with some coarse  
granular ls., dove ls., and  
some hard silty or dolomitic  
beds in appearance.

The base of the Carters comes  
25'  $\pm$  above the *Doleroides*  
Zone of the upper Lebanon.



⑦

October 7-

Breakfast

1.10

Lunch

1.20

Supper

2.25

Gas

4.55

2.08

Marshall Knot in morning.  
 Columnaria at base of Ridley.  
 Afternoon collected Lebanon  
 on US 41, Heritage of  
 Woodbury.

October 8 -

Breakfast

1.20

Lunch

1.20

Gas 6 gals \$7.89

1.51

Supper

2.20

Law section at Kittell.  
 Low. Lebanon has Hesperorthis  
 here.

Went over Cutlers-Tyone  
 0.8 mile east of Readyville.  
 Tetradium very abundant in  
 lower part of section. Saw  
 a large Camerella suggestive  
 of Plattin. Beds just under  
 Bentonite with many  
 Camerocladia-like branchings,  
 also Doleroides, Strophomena,  
 Opikina all suggestive of  
 the Lebanon. Tyone beds are  
 thin bedded but formally like below



⑧

0666

Write Car ton about  
Mexico coral.

Oct. 9 Breakfast  
Lunch  
Supper

1.20  
1.25  
1.40

Went to Nashville and collected on W side of city. Mayssville about 3.6 miles E of Junction of US 70 N + 70 S Waldron at Person Ay, 2 mi E of Pegram and opposite Hidden Lake.

Afternoon collected Mayssville + Richmond on US 70 S  $1\frac{1}{2}$  +  $\frac{3}{4}$  mi. E. of Junction of US 70 S + 70 N. Collected Arnheim on N side US 70 S about 7 miles W of Nashville City limits. Returned to Murfreesboro for night.

Oct. 10 -

2.30  
2.25  
4.55

Breakfast  
Lunch  
Gas 58014  
Service car  
Hotel Murfreesboro  
Stamp  
Supper

1.30  
1.00  
2.20  
1.00  
3.50  
0.30  
2.25

Stopped at Rome to see Lebanon - Carter. Benford below Ly pond is mentioned by Fox 1944. Minella occurs in Ly pond part but a Cornella like



(9)

species described by Fenton  
from Platteville occurs in  
beds below the bentonite

October 11-	Cabin thru Oct. 13	13.00
	Gas Knoxville 58210	2.92
	Breakfast	1.20
	Lunch	0.50
	Supper	1.80

Went to Friendsville to see  
Lenoir section. Worked one  
mile east of Friendsville and made  
an effort to get a collection  
above the Maclure bed. This  
rock is moderately cherty, the  
chert weathering out in small  
masses. Sandy chips also  
weather out. Fossils are very  
rare and show mostly in the  
form of trilobite fragments  
but recognizable specimens  
are very rare. A few small  
brachiopods suggest the lower  
Athens which here has turned  
somewhat cherty & cobbly.

In afternoon went into  
creek & collected 5 of 4 friends  
church and in the field SE  
of the church. Here *Comarella*  
*longirostris* is present above  
the Maclure as well as below it.



(10)

While collecting Christiania an old colored man recommended that we collect at the old colored cemetery. Here fresh graves showed an abundance of Christiania and the beds some 50 yards SW of the cemetery yielded Birmania, Paurorthis, Isophragma, Orthambonites, Paleostrophomena and Apatomorpha. This is an assemblage exactly like that at the locality  $2\frac{1}{2}$  miles SE of Riceville.

October 12 -

1.25	Breakfast	1.25
1.40	Lunch	1.40
2.30	Supper	2.30
4.95	Kegs (5)	0.50
	Gals	2.06

Went first to Miser Station to collect Levier. Here shaly rock produced Paurorthis, Captonotella, Oxopleura (small) an assemblage like that occurring in the marbles. We think it is probably Fellies in age rather than Levier (Ottawa).  
Afternoon collected at Friendsville



(11)

October 13 -

Breakfast -

1.25

Lunch -

1.10

Supper -

2.45

Rdg. Tickets -

0.20

Visited Heiskell and measured section near Fleamon Mill. Collected rhynchonellid beds in gap south of Heiskell. These beds are Moccasin or possibly the Eggleston equivalent but more probably the former.

Afternoon scouted for other exposures and found a long section NE of Fleamon Mill about a mile. Here above the reds and thin cobbly beds of the *Oligorhynchia* horizon granular cherty limestone produced large *Nidulites*. Thus this horizon proves to be the Ward Cove. We also discovered Wardell fossils in the upper part of the Benbolt and in the limestones overlying it. The section here is thus

Benbolt  
Granular l.  
Ward Cove  
New form.  
Elway  
Blackford

↳  
Moccasin  
Watten  
Wardell



(12)

October 14 -

Breakfast -

1.00

Lunch -

1.00

Supper -

2.50

Gas -

1.30

Cabin for Oct. 14-15

6.50

In morning went up to Fountain City and there found marble overlying the Beckmantown and followed by Dinorthis-bearing limestone, blue gray granular. The Dinorthis looked like *D. willardi*. Overlying this comes cobbly ls. with *Oligorhynchia* and *D. willardi* & other fossils in abundance. On top of *Oligorhynchia* comes the Ward Cove.

From Fountain City we went to Chesney and found some 50' of gray granular limestone overlying the Beckmantown and underlying *Givonella* beds at the base of a thick marble which underlies the *Oligorhynchia* beds.

From Luttrell we took Tenn. 61 to Tenn. 33 and looked at the Witten-Moccasin-Eggleson section about 5 mi. NE of Maynardville. Witten passes into Moccasin which is apparently the same as the *Pionodema* beds at Hogan.



(13)

These really should be called Moccasin. The Eggleston occurs above the thick bentonite and below the Curdsville.

After lunch went to Evans Ferry section. Found Elway under *Oligorhynchia* beds. Could not confirm presence of *D. atavodes* between Elway and *Oligorhynchia*.

October 15-

Breakfast	1.10
Lunch	.83
Supper	<del>2.35</del>
Gas	2.60
Car repair	6.20

In morning went to Maryville to ship beagl. 7 kegs sent off weight 505 pounds.

Went southwest of Maryville on U.S. 411 to junction with U.S. 129. On U.S. 129 saw Knox and Athens in contact. The basal Athens contained fossils of the lower Christianica zone including the trilobite Arturochela. Went through the Athens and Tullies to acc. sandy series and then the red Beds. The latter contained a large *Lingula*.



(14)

and yellow sandy shale with *Pionodema* I. The horizon must be Wardell-Witter.

SE  
After lunch saw Athens  $\frac{3}{4}$  mile NE of Mint. Here just above Knox are 75' of sandy shale with *Christiania* and other "Lenoir" fossils. Above this is a long sequence of Athens with graptolites. The Athens consists of silts and fine grained sands in lenses. Some of the layers are distinctly fluggy and the graptolites extend through a long thickness.

Saw Jellies 1 mile N of Old Kagley Church where *Cyrtosotella*, *Aechelichas* and *Orthambonites* were seen. Drove into Moccasin Then went home



(15)

Bridge Toll

0.30

October 16 -

Breakfast

0.80

Lunch

1.00

Supper

1.45

Cottage

2.50

First visited section about 2 miles SW of Philadelphia to see Lenoir. Went up hill on S side road to see upper Lenoir. Lenoir is probably 150' thick. Above it comes about 200' of pink marble which is probably the Holston and is in the position of the "Upper Lenoir". Shale succeeds the marble.

After seeing Lenoir we went down to Sweetwater and took Madisonville road to SE. Saw Athens with trilobites about  $4\frac{1}{2}$  miles SE. Then thick Jellies above it. In Jellies saw and collected from a cobbly bed containing *Prionites*. This is the same bed as Butts collected at Misen.

$\frac{1}{4}$  mile N of Christiansburg saw some 25-30' of limestone underlying Athens shale. Limestone contained large *Sowerbyites*, *bufozera* and *Leptellina* and probably belongs with the Athens. The Athens is the same as that NE of Christiansburg seen last year. Drove through section southeast of Christiansburg but added no new information.

The big *Sowerbyites* should be checked as a possible Lenoir fossil. The specimen of *Sowerbyites*-like shell found by Wang in the Billingsburg zone should be examined in this connection.



(16)

Finished the day at Athens, about 1 mile northeast of the courthouse. Here we saw *apatomorphazone* which occurs on top of hill east of new quarry. The chert fossils between this zone and the Knox must be derived from the Lenoir as *Valcouria* was taken. The Lenoir in any event would not be very thick.

October 17-

Breakfast	0.80
Lunch	0.60
Supper	3.50
Gas.	2.73
Cabin (Chattanooga)	3.00
58765 Oatcrash	

In morning visited section on Hiwassee River. Above Lenoir and below Athens comes an unknown thickness of shale which is overlain by some 12' of oolitic ls with black oolites. This ~~is~~ overlain by a foot of cream-colored granular ls. *Christiana* occurs in a sandy shale band in lower part of oolite.

In afternoon went to Riceville but this locality is now lost. Saw another locality of same beds only 150 paces from Riceville a few miles SW of Riceville locality. Drove to Chattanooga for night.



(17)

October 18-

Breakfast —	1.30
Lunch —	0.70
Supper —	1.40
Gas —	1.97
Service car 58979	2.50
Room 2 nights Calera	5.00

Left Chattanooga early in morning and arrived at Birmingham about 10:30 AM. Went to Gate City to see Chicamunga ls. Here thick beds of fine-grained shaly ls. with *Diphyridia* occur at bottom. Middle beds thin-bedded, shaly with many fossils, *Oxoplectra*, *Camperfortia*, *Glyptothia*, *Hesperothia*, *Strophomena*, *Opikina*.

Above this come about 15' massive ls. followed by 2" of bentonite. On this are ca. 50' of calcarenite with *Dystactospongia*, *Columnaria*, and *Stomatocarium*. In upper part of this 50' bed comes *Cyrtophlegma* near top with *Tetradium cellulosum*. Just above the 50' bed are 2-3' crumbly ls. with *Pholidops*. Then come granular ls. & platy ls. ca 10' which contain abundant *Sowerbyella*. This upper 10' may be Denton.

Cooper thinks 50' bed may be Cartero.



(18)

October 19 -

Breakfast

0.90

Lunch

0.50

Supper

1.50

Went to Pratt's Ferry, collected from Whitesburg and up. Lenoir. On latter found large Sowerbyites. Spent most of day in a vain search for quarry in lower Lenoir. Late afternoon saw Athens on west side of Calera.

October 20 -

Breakfast

0.75

Gas (Kilabaster)

2.60

Lunch

1.15

Supper

3.00

3.95  
1.15  
5.10

4.15  
1.95  
5.10

At Pratt's Ferry 200'-250' of limestone looking like Little Oak or Lenoir. It had *Redulites* and *Lophospira* and must therefore be Ordovician. This rock was vertical. It may be the other limb of a tight syncline so little Athens exists here.

Visited large quarry in Little Oak about 2 1/2 miles NE of Pelham. Here *Binnia*s were abundant near bottom. Little Oak rests on Lenoir here.

Made fine collection at intersection 2 miles NE of New Hope Church. At this place the Little Oak fauna corresponds to the Lower *Christiana* fauna at Friendsville and the *Christiana* beds at Pratt's Ferry.

Drove to Rome, Georgia



19

October 21 -

Breakfast

1.20

Lunch

0.90

~~Supper~~

13.20

Hotel at Rome, Georgia

4.50

Gasoline

2.00

Tips (Hotel, Chattanooga)

0.50

Left Rome and went north on  
 US 27 to see localities visited  
 in 1939. About 15' yellow sandy  
 shale and thin ls. under the main  
 locality. This contains abundant  
*Fascifera*. Above this comes some  
 20' of thin bedded ls. with shale  
 partings abounding in fossils.  
 These undoubtedly underlie the  
 Hesperiid this has been on the  
 highway in 1939.

Went to see the section along  
 the highway south of Chicomang  
 Creek not far north of Capt. Bop.  
 At the bridge over the Creek are  
 thin bedded ls., much cracked and  
 with *Ostracods*. On the highway  
 are hard limestone weathering  
 with a crust and suggesting the  
 Perry. Above these the section is  
 covered. Then comes a small  
 thickness of mushroom-like ls. that  
 Butts called Mosheim. All below  
 this has placed in the Musfreesboro.  
 Above the Mosheim are some  
 30'-40' of cherty limestone called  
 Ridley or Lenoir by Butts.

Just at the road forks the  
 rock gives way from massive  
 limestone with chert to shale  
 and platy ls. with abundant  
*Fascifera* and *Rosticellula*. This  
 division is all of 20-25' thick

Chicomang  
 Covered  
 Platy  
 Musheim  
 Hesperiid  
 Quarry  
 Ostracods  
 Ridley  
 Mosheim  
 Murphy



(20)

and is the same as the Fascifera beds on US 27. Above these beds come platy ls. with shale partings same as on US 27 but in addition some 15' of similar rock with Hesperorthus, Anostrophia and Eozyga. I think this is same as Hesperorthus horizon on US 27. The combined thickness must be about 35'. Above the Hesperorthus beds are massive Camerocladia bearing ls. about 30' in thickness. Above this for some distance on road could be found fossiliferous plates of ls. with Hesperorthus, Sowerbella, possible Dalmanites or Pionodema. This is undoubtedly the Lebanon.

Considerable covered distance follows lost Lebanon sign but in a small stream about  $3\frac{1}{2}$  miles south of Circumference Creek muddy ls. of Moccasin type were seen. Some pure ls. in the mass contained abundant Tetradium. This is the Carter-Moccasin.

The written evidently includes Butts' Lenoir plus the Fascifera beds plus the fossiliferous layers through the lower Hesperorthus horizon. The remaining fossiliferous beds are Lebanon.

I think the big cut on US 27 is upper Ottosee of Rye Cove. Must examine other collections in area. I think all the rock up to the Fascifera beds belongs in the Murfreesboro. Fascifera is Paines,



(21)

October 22-

Breakfast	—	0.85
Lunch	—	1.20
Supper	—	1.90
Hotel Chattanooga	—	6.60
Toll		0.35
TVA maps		0.70
Car storage		0.75
Gas Athens, Tenn 59420		2.57
UPS.		0.20
Cab in 2 nights (Knoxville)		8.00

In 1939 notes I state that I saw *Bimuria* abundant 30' below top of Little Oak. On this trip we also saw *Bimuria* abundant 5-10' above floor of quarry. The upper *Bimuria* is large and should be compared with the smaller ones in the lower part that I am calling *B. battei*.

Visited TVA for maps and saw map-making process. Drove to Knoxville in driving rain. Hard downpour in night.

October 23-

Breakfast	1.15
Lunch	0.90
Gas	1.68
Laundry (2)	2.72
Supper	2.35

Went to Marysville and shipped 5 kegs.

Worked on section along U8 129



(22)

October 24 -

Wrote P.P. Fox for Ordovician fossils.

Breakfast		1.10
Lunch	4.39	0.94
Supper		2.33
Small Knife, Tacks & nails (Oct. 23)		0.90
Room Knoxville (1 night)		4.00

Ran section down through settlement called Six Mile. Lowest Athens a sandy bed, fairly massive overlain by shale. Saw no fossils. Lower Athens a black to dark gray sandy shale. Fossils begins with a sandy sandstone and terminates in a coarse calcareous ss. Series yellow slaty shale with thick ss in its midst. Moccasin reds occur near Six mile school contain a thick sequence of yellowish ss near top. A red Moccasin bed is overlain by black Devonian shale & this by Mississippian ss with *Spinifer* and *Tognifer*.

By on Tenn 71,  $\frac{3}{4}$  mile NW of Lake Forest consists of coarse marble with *Multicostella*. Probably Vestal marble & is overlain by "Upper Lenoir".

Drove over Upper Lenoir where seen in 1939 just north of Shrobs Gap. Here considerable work is shown over a large area. On north side of Shrobs Gap Quad. north of Tennessee River the knob is overlain by 25'-30' of Moccasin-type of vaughanite. Above this come



(23)

some 50'-60' of blue gray somewhat shaly, granular ls. containing small fossils: *Opikina*, *Mimella*, nucleus, small *Valcouria*, sponge. This rock weathers to ragged shaly strata or plates and has a very irregular fracture. It is the Lower or True Lenoir.

This is followed by 100'± of cobbly limestone in massive beds that break into small cobbles when weathered. The limy cobbles are fossiliferous and contain *Christiania* in abundance. This "Upper Lenoir" is followed by marble and Tullio and the latter by cobbly, yellow "Otter".

October 25-	
Breakfast -	1.00
Lunch -	0.62
Supper -	3.05
Cabin at Cumberland Gap -	4.00
Gasoline 59702	2.52
	<hr/> 7.67

Hogskin Valley  
Powder Springs, Ga., Georgia  
At Mount Eager Church the church rests on cobbly yellow beds called Benbolt by Cooper. Just above these beds comes a second layer of cobbly yellow shale with *Fascifera*, *Multispella*, *Strophomena* and small *Lophospira*. Cooper calls these Benbolt also because of short and false - *Camerocladia* near their top. Above this comes a layer of Evidently the *Fascifera* beds of Liberty.



(24)

Hill and here are Top Bentolt or low Wardell. According to Cooper the *Fossifera* bed is up. Bentolt also because of small *Dystactospergia*. Bentolt is the lower + middle yellow cobbly band at the church.

Section at Rose Hill, Tenn.  
Maynardville □, Tenn.

At base of section occurs a Mosheim-like limestone thought by BHC to be in the Cloray chert horizon. This is followed by red beds and yellow shale with beds of earthy limestone about 90-100' thick. This is succeeded by cherty heavy-bedded limestone assigned to the Ward Cove. In the lower part of the red bed succession occur gray granular ls with thin shale partings containing *Strophomena oligorhynchus*. *Platycamara* was seen higher in the red-bed sequence.

Above the Ward Cove occurs a thin layer of vanhanite with *J. cellulorum*. This is followed by a cherty band.

After the chert comes thin bedded limestone with cobbly shaly bands belonging to the Bentolt. *Schreibella* was abundant. Above the Bentolt are platy ls. abundant in *J. cellulorum* and also containing *Ancistrostrophomena* and *Hebertella*. This at the road intersection at Rose Hill School.

Above the road intersection opposite the lumberyard comes *Cryptosporus*. Above this is Witten which is followed by Moccasin terminated by a bentonite. On the bentonite is nearly Celeston (20') terminated by the Caldwell.



(25)

Oct. 26 -

Groceries

Breakfast

Lunch

Supper

Gasoline 59889

Cabin 2 nights 26-27

Section at Glasgow Store

1.20

5.21

1.10

0.66

2.25

1.43

8.00

Lower part of section consists of Blackford with a red-bed in the lower part. This is succeeded by Elway with *Calliope* and *Lepidodendron*. There occurs a sequence of dark cherty limestone containing *Oligorhynchia* in the upper beds. This is the Ward Cove. On this bed is a thick *Vaughaniella* which is the base of the Otter of Huffman. This is followed by shaly beds with *Dinorthis transverse*. Above the Benbolt come Wardell & Witten followed by *Moccasin*. The lower part of the Ward Cove in this section contains *Salterella*, *Helicotoma* and two kinds of *Tetradium*. It is part of the true *Murfreesboro*. *Oligorhynchia* may thus be approximately *Murfreesboro* in age.

*Cryptophagnum* here ranged though about 200', the whole thickness of the Witten.

Saw an almost identical sequence on E side Va 70 about 1.6 miles S of Jonesville. Cooper thinks no blocky chert, all belongs to a new division equal to the *Oligorhynchia* horizon.



(26)

October 27-

Breakfast —  
 Supper —  
 Gasoline —

1.10  
 2.25  
 1.80

Went to Hagan to study cherty ls. at base of section. Here take cherty ls. from. This is true also pt. Walnut School on Wheeler. The lower cherty ls. had big *Lepidodictya* and fasciculate *Strophomena* suggesting Elway. Then followed a thick calcarenite, possibly the *Olizorhynchia* zone. Then came the upper cherty zone but we found no fossils to prove it as Ward Cove. The upper chert at Hagan has many snails suggestive of Peery ls.

Oct. 28-

Breakfast —  
 Supper —

1.10  
 2.25

Left Cumberland Gap and went over to Lone Mtn. Here  $1\frac{1}{2}$  miles N. of Lone Mtn. and on the Lone-Mountain to Jazewell road is a long sequence. About  $\frac{1}{2}$  mile north of intersection are rocks called Mosheim overlying cherty ls. representing the Peery Ward Cove sequence. On the Mosheim is a layer of cherty ls. overlain by shaly and thin bedded ls. containing *Dalmanites*.



(27) large Mimella, Strophomena, Sowerbyella and Murchisonella. These are followed by platy ls. with Dinorthis, Frasnella, Dalmanella and Rosticellula. On top of these are platy ls. with Murchisonella and Rosticellula. This is about the boundary of the Benbolt + Wardell. Up Wardell has a 40' calcarenite bounding in Stomatoceras. Above Stomatoceras just east of the road intersection come thin-bedded ls. with Hesperothia. The shaly beds are Benbolt. The Rosticellula bed which produced Oligonchus is at about top Benbolt or basal Wardell.

October 29 -

Breakfast	1.00
Lunch	1.20
Anti freeze	2.65
Lubrication, clean plugs	1.15
gas 10 gal 60065	2.60
Supper	2.25

On Bulls Gap about 1/4 mile NE of St. Clair, fine development of Chicamunga here consisting of a thin discontinuous layer of Rensselaer lithology. This is followed by blue-weathering limestone containing Maclurea. This is the Rensselaer and it is about 100' thick. It and the contact with the Knox are well exposed in the field and along the old quarry road 1/4 mile NE of St. Clair.



(28)

Gray calcarenite occurs in  
the "uplain". The Effner rock  
is in the Athens interval  
just on top of the Binnoria  
beds.

On top of the Lenoir comes finely  
cobbled sandy limestone containing  
*Chonetina* and *Binnoria*, the latter  
in abundance. About 400' of this  
rock are present. *Binnoria* ranges  
throughout. Above this interval  
comes a sequence of shale, often  
nearly black, and lenses or  
conglomerates of cobbly ls. of up. Lenoir  
type and the top one containing  
*Platystrophia* and *Chonetina*.

Below this upper zone and just  
on the NW side of Gulley Cemetery  
occurs a bed of calcarenite with  
Holston type fossils. This is definitely  
in the upper Lenoir interval. Thus  
the Athens shale and "Lenoir" actually  
interfinger.

Along the road leading south  
of Tenn 66A and just W of Mills  
Pond are Athens shales exposed  
for about  $\frac{3}{4}$  mile. At the road  
intersection just N of Robertson  
Creek cobbly ls in yellow shale  
contained *Bowerbyella* and a  
large *rafinosia* form.

In afternoon we discovered  
"Whitesburg" trilobites in the field  
about  $\frac{1}{4}$  mile SSE of White Horn.

In yellow barrier-type shale  
at the church in Guthrie Gap.  
platy ls. containing cystid stems frequently  
yielded *Zygospira* and *Oligorbysella*.  
We believe these represent the  
Witten horizon. Above this horizon  
the yellow shales are overlain  
by quartzite and red-beds of the  
Bays formation.



(29)

October 30 -

Breakfast  
Lunch  
Supper  
Expenses

1.00  
1.00  
2.30  
0.23.

Spent morning at Edison where we established *Oligorhynchia* in the sequence. Above the top of the Elway below apple tree dark ls. contain *Sowerbyites*. These ls are followed by cobbly beds with *D. atavoides* and the large fauna collected in previous years. *D. atavoides* is followed by dark ls. with *D. willardi*. These limestones are cherty. Above these come fine grained gray ls to gray calcarenites containing *Oligorhynchia*, *Oxoplocia*. The *Oligorhynchia* beds are succeeded by pink or cream coarse grained marble assigned to the Ward Cove. Above this marble comes the Benbolt, 100' or more of cobbly shaly beds. The Wardell succeeds the Benbolt. The Witten is blue gray platy ls abounding in *Zygospira*. The Moccasin forms the top of the sequence.

In afternoon went down to Lee Valley to see beds collected by Ulrich. These proved to be Benbolt-Wardell interval. From Ulrich's description of the locality at the forks of road these fossils may be Wardell. The Camerallas suggest this also. We collected Benbolt N of highway about 0.1-0.2 mile about one mile NE of Lee Valley and Wardell on the highway the same distance from Lee Valley. The Wardell contained *Campylorthis indugestrata*.



(30) October 31-

Breakfast

Hotel (3 nights) Morris town

Lunch

Supper

Gas 60156

1.00

13.50

1.25

2.10

1.23

Mosheim type locality - 50' Mosheim overlain by 6' Lenoir rock, followed by 35' of brown weathering granular ls, shaly in places, black to dark gray to light gray in color. This is Whitesburg overlying Lenoir and underlying platy Athens.

Locality 1 mile SW of Albany.

Section like that at Mosheim consists of about 35' of Mosheim resting on the Knox followed by about 30-35' of Lenoir shaly limestone and calcarenite. This is followed by 10-15' of brown-weathering dark limestone assigned to the Whitesburg. In the top beds in the road Whitesburg Trilobites are abundant.

Bluff City - on road crossing Indian Creek at saw-mill are massive calcarenite on W side road at intersection. These contain rhynchonellids and are basal Lenoir. Above these are the characteristic cobbly Lenoir beds which are overlain by shales with *Dicellograptus*. The Lenoir ranges from 40-100' thick.



July 10-18, 1944

Northern Virginia



0603

M. M. Bowman Jr. G # 670

Appalachian Valley

July 10, 1944

Left Washington July 9 at  
1 P.M. and arrived Charlottesville  
4:10 P.M. Stayed at B. N.  
Cory's overnight.

Section 4 miles SE of Harrisonburg on  
U.S. 33. Total of about 75 feet of  
"Moccasin" rock with intercalations  
of Lenoir type rock at base.  
Then 18' Lenoir lithology overlain  
33' of Vaughanite, then 15' 4"  
of Lenoir type.  
Covered 210'

Black ls. medium bedded 134'

Then covered with scattered  
black sh & black ls. 163'

Lumpy sh with thin ls 38'

Black shale & thin limestones 32'

Sandstone 4'

Top of section 247' to bridge

mostly graptolite sh & some ls.

Cryptolithus 150' above siltstone.

Robergia 110' above siltstone.



2 miles S of Hannsiburg on  
both sides of U.S. 11.

Martinsburg ls. - shaly  
limestone base with *P. laticosta*

Nodular ls with

*Christiana*

25'

Nidulites-bearing ls. with Nidulites 40'

Black shaly limestone of Athens 128'

Coarse xln ls. suggesting white Lenoir 10'

Lenoir

5'

with many bryozoa

Mosheim 161'

down



Section showing open anticline  
 $\frac{1}{2}$  mile northwest of Lurville  
 Station.

At top are sandy shaly beds  
 with *Cryptolithus* and *Calymene*.  
 Below this are about 10'  
 containing *Renssella* and  
*Eoplectodonta*. This  
 bed is somewhat massive  
 dark sandy rock. Below this  
 is a granular limestone for  
 about 35' and below these  
 black shaly limestone of  
 Athens type. No typical  
*Chamberlainia* here.

Section on M. M. Bowman  
 farm, on Co. lay 670. Take  
 US 11 for  $\frac{1}{2}$  mile, turn east  
 of on Co. lay 670 for 1000'  $\pm$ . Then  
 go N about 300 down ravine  
 between house & barn.  
*Cryptophagus* about 60'.  
 Below *Glanville* bed with  
*Christiania* and *Renssella*.  
 The *Cryptophagus* is about  
 25' above the highest  
*Nidulites*. Many fossil workings  
 & snails.



0606

July 10

Lunch .40, Supper 1.20, Room

July 11

Breakfast 0.55, Lunch 0.40, Supper 0.90  
Room 2 nights 2.00.

July 11

Lantz Mill

Lowest Seneca with small *Sowerbyella*  
suggesting *negutis* or *nana*.Cobbly material just above  
or on top of Seneca bounds in  
*Homotelus*, in first ravine to N

Cryptophragmus in This section  
occurs with Modiolites in cobbly  
Chambersburg type limestones. In  
the Louisville type of rock at top of  
sequence ~~occurs~~ does not contain  
Cryptophragmus.

Check horizon of my Lacey  
Springs *Amplexina*. They must  
be lower Chambersburg.

Lantz Mill





Whitesburg type section -  
 Some 20' of Mosheim followed  
 by 30' of Lenoir with large *Opikina*  
 and *Machmites*. This is *Bohemia*  
 by some 45' of yellow-weathering  
 shales. in which we found  
*Christiana*. Above this are  
 upper Lenoir - type of cobbly beds.  
 Many of the cobbles are  
 granular ls & have a shaly  
 surface with some fossils.  
 These are the Whitesburg fossils  
 and there are some 10' of this  
 material. It is overlain by  
 platy Athens ls. of smooth dark  
 grain texture and is like the  
 Athens of Virginia

November 1

Breakfast

Hotel Abingdon, Va.

Supper

Gasoline 60317 Marion

Lunch

1.10

5.27

2.00

2.34

0.90

Visited Lenoir beds at Marion  
 and then went on to Meadow  
 View to see beds at Geisler Mill.  
 2.1 miles N. of junction with Va 80  
 from Geisler Mill locality occurs  
 a sequence of Mosheim followed  
 by *Machmites*. Then ~~another~~  
~~then~~ a layer of dolomitized  
*Machmites* beds. This is followed  
 by more Mosheim-like rock  
 and then comes nodular ls.  
 with *D. inornatus atavoides*?  
 This is followed by Athens



November 2 -

(32)

Lunch

added to Nov. 1 meal 0.25

Key objects to our correlation of Cudaville with M. Trenton. He says all call it the older Hull. He says sinuities zone is above the Cudaville in base of Hermitage or Bogana nat in Cudaville. Now, the sinuities bed directly succeed Christiania bed and include everything from Christiania bed well up into Martinsburg. But Cudaville is basal Martinsburg probably. We have Cudaville on top of Colliertown. If he correlates Christiania bed with Shoshone, then Cudaville must underlie the Oranda as it is Kirkfield (Hull).

Visited crinoid locality south of Hansonville but the place is nearly cleaned out. Looked for other places but found only one where we collected *Leophragma*. Afternoon went to Blackford for Benbolt but saw no collecting.

Basal Benbolt is in all probability the very top of the Upper Lefor. This permits us to block in the two zones of *Leophragma*, the Whitesburg one and the Benbolt one.

Rain at night



(33)

November 3 -

Gas 60470

~~Lunch~~

Tip at Lebanon

Room + board (Lebanon) 3 days

Buttz on p. 40 of Bellefonte □  
 report correlates Rodman with  
 lower Chambersburg Echino-  
 sphaerites zone. This is  
 undoubtedly wrong as the Rodman  
 contains *Orpuda* fossils.

Shipped 5 kegs from Jazewell.  
 Visited Perry locality at Wittens  
 Mills and then were rained out

November 4 -

Breakfast

~~Lunch~~~~Supper~~

Gasoline 60625

1.00

2.85

2.32.

Went over to Porterfield Quarry  
 for morning. Examined "Lenoir".  
 On the Knox occurs a thin Mazonian  
 followed by calcarenite of Holston  
 type and containing snails. Above  
 this is blue-gray, cobbly limestone  
 lithologically exactly like the  
 upper Lenoir. At the bottom it  
 contains *Valcourea* and *Pleuropho-*  
*mena* in great abundance. Then  
 comes a small *Sowerbyella* in  
 abundance. This is followed  
 by similar rock but with less  
~~fossils~~ brachiopods but containing  
 large cephalopods. Then comes the  
 "Holston".



(34)

On way to Pulaski stopped at  
Sharon Spers. locality to collect  
silicified fossils. Overlying the  
Athens-like cobbly beds occur  
calcareous and cobbly ls. with  
*Dystactospongia*, the *Stromato-*  
*genium* which suggest Wardell.  
Cooper has already called them  
Beubbt. Above these occurs  
Moccasin.

November 5—

Breakfast

1.20

Lunch

1.20

Supper

2.51

Hotel, Pulaski

3.50

Cabin at Christiansburg

3.50

At Quarryville we looked at the  
abandoned quarry near its east  
end. Here the ls. rock under the  
shale is coarse, thin to heavy-  
bedded calcarenite and undoubtedly  
is Holston. Beds of "up. Fenoir" type  
were seen intercalated in the  
lower part of the sequence. Some  
of the quarry beds are a mass of  
small bryozoa. Evidently Butts  
identified Fenoir under the black  
shale at the west end of the quarry.  
The quarry rock at the end west  
investigated is most certainly  
Holston.

Early morning went to Draper,  
Virginia where, on the *Lecanospira*  
zone of the Canadian, occurs a  
shaly conglomerate in the base  
of the Middle Ordovician. This  
is followed by about 100' of



(35)

granular limestone containing abundant rhynchonellids. Throughout the entire thickness also present in abundance is *Mimella nucleus*. Above the calcarenite occurs a considerable thickness of cobbly limestone, the upper part of which is cherty. This upper part is strongly suggestive of the Lincolnshire but we were unable to find any fossils to prove the point. Cooper claims to have a thin representative of the Whitesburg, then comes the Athens.

Next we visited a large quarry at the Claytor dam, 8 miles E of Radford. Here Mesheim overlies the Knot and is followed by some 200 feet of shaly, cobbly limestone in which *Valcounea* is common. These beds suggest the "Upper Tenois" but we have no conclusive evidence.

Went to Ellett NE of Christiansburg and saw a sequence of ls. above Mesheim that has Whistle Creek fossils. Last year we thought this to be Lincolnshire but the fossils are more suggestive of Whistle Creek. Above these beds occur a few feet of granular limestone assigned to the Whitesburg. Spent two hours collecting in these beds and in the Athens between Ellett and Lutes's Gate.

Whistle Creek  
V.



Phone to R. S. Edmundson  
November 6 -

(36) Breakfast	1.25
Gasoline 60748	1.79
Lunch	1.12
Supper	1.90

Ask Kay for Vermont Christiania  
to illustrate in Ms. Took in Cady  
for Up. Chazy mentioned in  
Kays Pennsylvania paper (p. 12)  
Write Swenhopel for Christianias  
from Newfoundland.

Christiansburg to Salem, from  
Salem over to Catawba and  
collected most of morning at  
locality at junction of 114 and 311  
about 11 mile W. of Catawba  
Sanatorium. This locality is quite  
definitely Whiteburg.

Went east on 114 up Catawba  
Valley to Fincastle. Saw 3 localities  
one 3 miles east of intersection of  
311 & 114 just at base of Mtn. of  
Here much shaly ls. of Up.  
Senon type occurs with  
many layers of cherty ls. suggesting White  
Creek. Intercalated in this ls.  
are layers of Holston-like  
material. This intercalation is  
best shown on Catawba Creek  
7 miles East of the intersection.  
Here a great mass of Holston  
exists with intercalations of dark  
shaly Whiteburg ls. abounding  
in *Cyrtotatella*.

Eleven miles east of the  
intersection & 1/2 mile W of



(37)

near Haymaker 500' of marble-like ls. overlies Lincolnshire and a considerable thickness of Mosheim. This marble contains fossils common at Porterfield quarry and is undoubtedly the Effna as claimed by BNC.

November 7 -

Breakfast

1.10

Lunch

0.30

Supper

2.10

Room (Spec at Clifton Forge, night)

1.75

Rich Patch -

on Va 616

Section 0.6 mile NW of junction 616 and 621 showed a long section beginning with Whistle Creek at base, followed by Mosheim. Then comes a Lincolnshire interval in which we found Sowerbyites. This is followed by beds with *Nidulites* and then comes somewhat shaly ls. with *Dinorthis transversa* and *Oxoplia* in abundance. This is followed by 180' of beds with abundant small *Sowerbyella* and, 90' above *D. transversa*, *Cyclospira* was found. Above the *Sowerbyella* beds come crystalline ls. with *Oligorhynchia* and *Doleroides*. Above the crystalline ls. which is fairly thick comes fine shales.

on Va 621

The same sequence appears on a property 0.6 mile SE of of the junction of 616 and 621. Here the shaly beds above *Oligorhynchia* contain *Tetradium* in lower 25' and a zone of about 3' thickness about 85' above the base of the shale.



(38)

abounds in *Doleroidea*. Above this bed the shale contains few limy lenses and is referred to the Martinsburg.

About  $\frac{1}{2}$  mile SE on the same road where a large spring comes out of the hill occurs a larger sequence. Here *Nidulites* occurs in the upper beds at the angle of the face west of the house.

Cooper says upper *Nidulites* comes just under the *Oligorhynchia* bed. In section on Va 616 a *Mosheim* underlies the Whistle Creek beds.

November 8

Breakfast

1.05

Lunch

1.50

Supper

1.90

Went over to Warm Springs Valley. First section about  $\frac{1}{2}$  mile SW of junction of US 220 with Va 606. Here a thick *Mosheim* is overlain by cherty beds which are followed by dark limestone with *Nidulites*. This is followed by a long sequence having *Sowerbyella* and this by the Witten. Above the Witten comes shaly beds and thin limestone of the *Moccasin* (or *Eggleson*). The next section occurs  $\frac{1}{2}$  mile SW of Sinking Spring Church on US 220. Here an anticline occurs in the *Mosheim*. On the upper part of the *Mosheim* we found *Tetradium cellulorum*. Above the *Mosheim* are cherty beds of possible *Lincolnshire* age but we saw no fossils to prove it. Possibly the *Mosheim* here equals *Lincolnshire*.

Varying S of Martinsburg  
Spring - *Lincolnshire*



(39)

In the upper part of the cherty beds *Nidulites* is abundant. A considerable distance above *Nidulites* black ls. contained *Dunorthis*, *Sowerbyella* and *Nimella* probably the Beulobft. The black ls. extend for considerable distance and terminate with beds containing *Lichtenana*, *T. fibratum*, *Strophomena* and *Bryozoa*. On top of this come characteristic platy Witten beds with *Zygospira*. 100' ± above the lower Witten comes red morassim for considerable distance.

Along the roadside about 1/2 - 3/4 mile SW of Limping Spring Church the cherty beds are well exposed. About 40-50' occur below *Nidulites* and the cherty continues above the *Nidulites* beds. Possibly the *Nidulites* occurs in the Lincolnshire. The cherty beds below *Nidulites* are probably Lincolnshire.

In the first section seen SW of the junction of US 220 and 606 the basal beds above the Knox consist of alternating striped blue gray ls and dolomite beds 1-1 1/2' thick. This is the Blackford and may be the Tiger-striped beds of Kay according to BNC. This interval also contains chert conglomerate.



November 9 -

Breakfast

1.25

Lunch

0.90

Supper

3.15

Hotel (Clifton Forge 3 nights BWC) 2 nights GAC

12.50

Gasoline 60 &amp; 30.

1.28

Room Staunton, Va

3.50

Arrived Colliertown and went to  
locality 2 miles W of Brownsburg  
to see Whitesburg.

November 10 -

Breakfast

1.00

Lunch

0.85

Supper

2.75

Car service + gasoline 60967

4.65

" storage

0.50

Rain all day. Called on B. H.  
Thompson Bear Bringer's Glen.

November 11 -

Breakfast

1.40

Lunch

1.20

Supper

3.30

Car storage

0.50

Room Harrisonburg 2 nights

7.00

Morning went to Green Mount  
Church about 5 miles NW of  
Harrisonburg. Take Va 260 on west  
side of Harrisonburg by going  
W on U.S. 33 to Va. 260. Green Mount  
Church road is indicated by a  
sign. At Green Mount Church  
The road running west from the

To reach Green Mount take road west from U.S. 11 numbered  
721, follow 721 to Edom. In Linville take sharp turn west about 200  
yds. S. of store. At Edom turn left on Sta. 260 to 772. Turn  
West on 772 to 617. Church has at junction of 772 & 617.

(40)



0700

41

Church shows Trenton opposite the Church. Then Oranda in the field just before reaching the creek. Chambersburg, granular and dark occurs on the east side of the creek. Then comes Athens type of rock west of the bridge.

Of 0.1-0.2 mile north of the Church on Virginia 617 occurs a splendid exposure of Trenton rocks which we identify as Salona on the grounds of finding Salonia. This section extends to the junction with Va. 777 at an old mill. The Salona contained many fossils that occur also in the Oranda ~~Salonia~~ such as Eoplectodonta, Bilobia, Renssella, small Sowerbyella. The Salona is quite definitely an extension of the Oranda fauna.

About 100 yards west of the intersection of 617 and 777 occurs a superb section of Oranda all of 30' thick. Here the Oranda is composed of alternating soft and hard layers. At the bottom occur small Renssella, Christania, Hebertella and Bilobia. In the lower 5' Bilobia and small Renssella occur in countless numbers in thin hard thin layers. In the upper 15' Eoplectodonta, Renssella and Eoplectodonta are common. The very top bed contains Leptaena in great abundance.

In the Salona Brongniartella occurs about in the middle of the exposed sequence at about the base of the hill. Plectrothis, Parastrophing, Eoplectodonta and the big Rafinesquinae occur above the Brongniartella. Cryptolithus was found throughout the Oranda and in throughout the Salona.

Look for Glauconia in  
Chambersburg collection.



42 November 12 -  
 Phone to reserve room in Winchester 0.45  
 Breakfast - 1.35  
 Lunch - 0.85  
 Supper - 2.55  
 Lodging Woodstock 3.00  
 Green Mount Church at junction  
 772 + 617.

Cryptophagnus at Bowman Farm  
 are in black somewhat shaly  
 fracturing limestone somewhat of  
 Athens type.

Spent morning collecting at  
 Green Mount Church. Fossils taken  
 from Saloma are from about  
 35' of beds.

Went to Lacey Springs where we  
 found Chirotrania with Rotbergia  
 and Ampyxina through about  
 150 - 200' of rock. Limestone called Athens

November 13 -

Breakfast 0.90  
 Lunch 1.00  
 Supper 2.05  
 Lodging Winchester 2 nights 6.00  
 Gasoline 61090 1.70

Morning visited locality along  
 Swover Creek 0.6 mi. S of  
 junction of 691 + 692, W of Lantz  
 Mill. Oligorhynchia is very  
 abundant in the lower part  
 of the St. Luke formation. It  
 occurs just over the fence which  
 is approximately on the boundary  
 between the St. Luke and  
 underlying Edinburgh formation.



43

Fossils are very scarce in the upper beds of the St. Luke. At this locality occurs an excellent section of Onondaga and Martinsburg.

Next I went to Strasburg Junction to see section. The fossiliferous beds collected by Butts and the Cybelopsis bed are definitely similar. The granular beds we assign to the Whitesburg. The Cyrtosotella beds, we now believe, belong to the Athens as revealed at Sharon Springs and the Porterfield Quarry. This is the Athens that goes over into Ward Cove & Benbolt.

Went to Hypp Hill to collect dirt and etching material. This is a superb section for Nidulites which occurs from the highway almost to the very top of the Chambersburg. Benbolt elements seen in the lower part of the Nidulites zone are Platycystites and Dinorthis transversa. The latter occurs in the field where the innumerable etch pieces were collected. With it occurs Corinorthis and Christiaquia. Beds at the top of the Chambersburg section contain numerous Camerocladia.



44 November 14-

Breakfast  
Lunch  
Supper1.20  
1.20  
2.95

Rain all day but visited Rest where dark intercalations occur in the Mosheim. We found large ostracods and Strophomena in the dark granular rock. This suggests that "Lenoir" type rock interfingers with the Mosheim. We also saw several fossils suggestive of *G. cellulosa* but were unable to collect them because they were on large slabs.

(first) Went to locality 1.7 miles SW of Wadesville. To locate Whitesburg said to be in that section. Between "Lenoir" and Chambersburg type of rock occurs a considerable thickness of shaly and platy to which include occasional thin granular plates or lenses. These granular masses contain fossils such as *Crinoid*, *Renssella*, and *Christiana*. These indicate a relationship with post-Whitesburg Athens. No true Whitesburg was seen.

At Strasburg junction about 15' of granular and shaly limestone lies between the granular beds and the cherty Lincolnshires. These beds contain abundant *Strophomena* at base, *Trilobites* and at top Whitesburg-type fossils appear. It all may be Whitesburg.



45. November 15-

Breakfast

1.35

Lunch

1.85

Gasoline (61261)

2.22

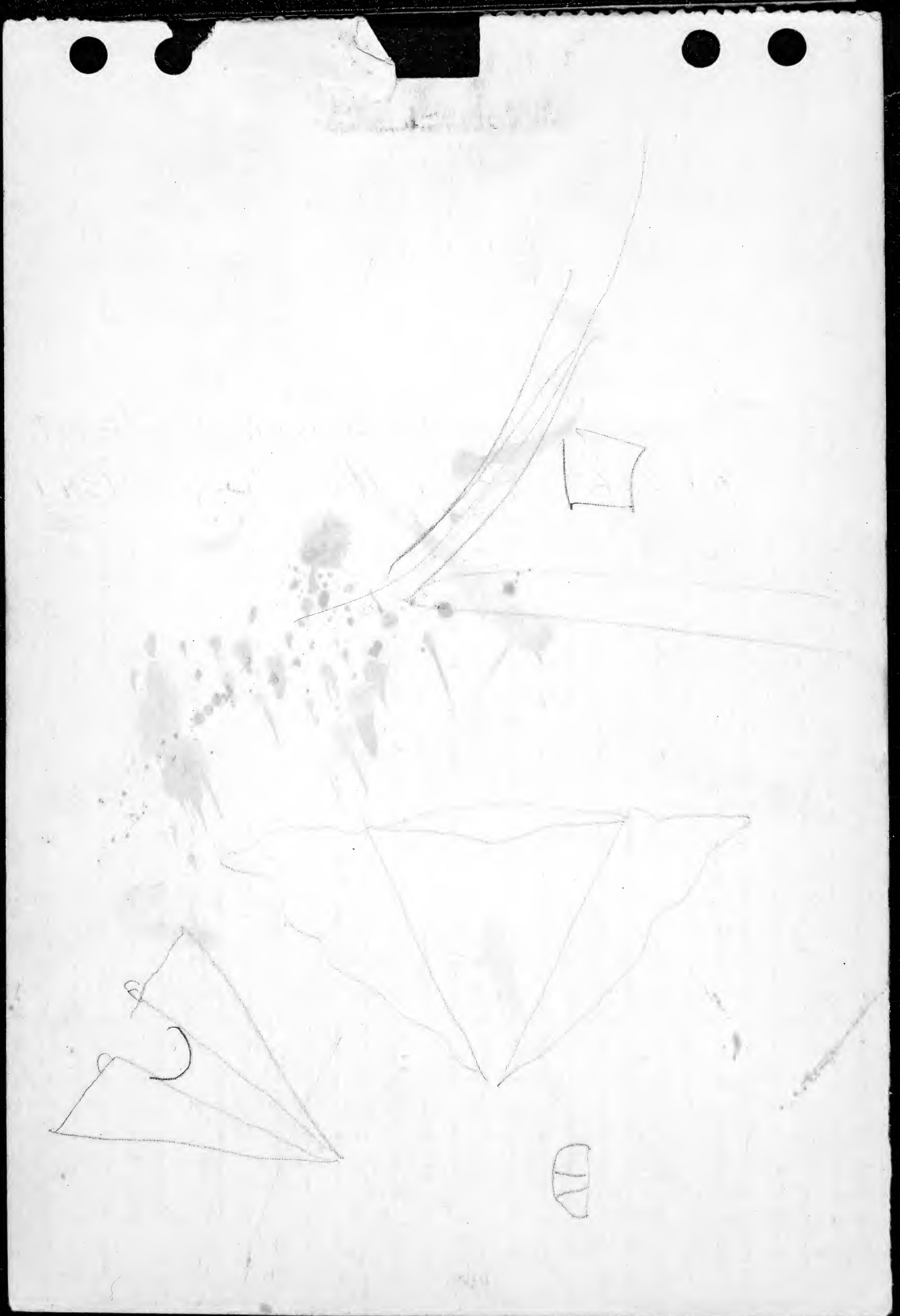
Binnoria at road crossing of ~~Blk~~ 50  
over Opegnon Creek, Echinophloeus  
also

Mileage on return to Porter St.

61336 To Capitol Garage 61342

On east side of Winchester saw  
black ls. beds in Mosheim all  
underlying beds with Oxoplocia.







0704

1945

August 30

All Whistle Creek specimens should be ~~relabelled~~ relabelled to read 2 miles NW of Lexington.

Saw a long section along Collier creek on road beside Creek 1/2 mile NW of junction of 251 and at pipe line crossing of road. Here we saw "Lenoir" with Whistle Creek fauna overlying the Mosheim. This is 187 feet thick and is followed by coarsely granular Murat about 5' feet thick then 40' dark bedst. 12 more ft. Murat.

Above the Murat is "Lenoir" containing Sowerbyites. Dark granular limestone. 185' thick. Corp got *D. atavoides* here also.

75 13

Botetourt ls. not well developed or exposed but about 8'  $\pm$

Metabentonite 50' above Botetourt

This is followed by intercalations of slabby Athens ls and cobbly Chambersburg type ls. 3 cobbly intercalations but only one good body of Athens type 400'.

This unit abounds in



Homotelus, Amicyx and other  
Tubobites, mostly broken but  
with very little else.

Then follows 15' of Athens  
lithology with *Dinorthis*  
*transversa*, and above this  
*D. transversa* occurs through  
60' of cobbly beds. These also  
contain *Oxopleura*, *Christiana*  
Husel. This is the brachiopod  
zone of the Strasburg section.  
Above this is cobbly limestone  
ca 200' thick. No *Medulites*  
seen.

Above this are 20' of dark  
granular ledge-making ls.  
Then 25' of striped "others".  
Above the Athens are 60'-70'  
of gray argillaceous ls limestone  
with calcarenite lenses  
containing *Rafinesquina*,  
*Lambraphyllum*.

In afternoon visited  
Whistle Creek Area. About  
1/2 mile down the creek  
and 70' below the Botetourt  
occurs *D. atavoides* just over  
the Murat. Thus the Lincolnshire  
here is divided into two  
members by the Murat. The  
~~basal~~ Whistle Creek below  
and *D. atavoides* beds above.

White Lany Whitcomb  
for Salama  
material

*Echinorhynchus*



August 31

Section about 4 miles  
N of Rockbridge - Augusta  
line on Va 602  
1 mile S of McKinley  
= Rb 17 - on Walker Creek  
2 collections

15'

Botetourt

131'

Lowbyites & } Cherty ls.  
D. atavoides

Lincolnton

5'

I. syngisporoides bearing vanhantae 5-0als

229'

Cherty ls. with big Leptodictya in lower  
part, Multicostella, Strophomena &  
Dinorthis holdeni.

Blocky chert zone  
= Elroy

15'

Impure calcilutite

70'

Impure striped ls., gastropods

Blackford

Knox



0707

1/4 mi. E intersection 608 +  
652, spring crosses road  
ca 6 mi SE of Stanton Va.

Send Coop Warburg's paper



July 5. July 15 - Sept 8, 1946

Charge for \$450 Travelers checks

~~3.38~~

July 13 ✓ With P.E. Cloud  
gals gasoline Washington

~~1.60~~

July 15 Started 7:10. Mileage 55697

Caster OK both wheels

Camber  $\frac{3}{4}$  in left,  $1\frac{1}{2}$  in right  
wheel, should be  $\frac{1}{2}$  in both.

✓ Gas 10 gals. Harrisonburg, Va (55832) ~~2.40~~

0.55

Lunch

~~0.55~~

0.75

9 gals, 3 qts Pulaski (No Receipt)

~~2.33~~

1.30

Supper Pulaski

~~0.75~~

Room Abingdon

~~2.50~~

July 16 Abingdon 58086

Breakfast

~~0.60~~

0.60

Gas 11.3 gals. Rutledge, Tenn (56193)

~~2.88~~

0.50

Lunch

~~0.50~~

0.80

9.4 Mc Minnville

~~2.35~~

1.90

July 17 { 10.8 Linden, Tenn (56537)  
Toll over Perryville bridge (56550.4 at End)

~~2.75~~

~~0.55~~

Supper

~~0.80~~

Room Linden, Tenn.

~~1.50~~

July 17 Breakfast

~~0.75~~

Lunch

~~0.50~~

0.75

Gas & Oil Brownsdale

~~1.96~~

0.50

Supper, Wynona, Ark.

~~0.71~~

0.71

Night lodging, Wynona, Ark.

~~1.50~~

1.96

Morning went down to Blue Mound  
Glade and collected until 10:30.  
Went through Memphis headed  
for Batesville but met construction  
anal were forced to stay at Wynona



(2)

July 16 Breakfast (53797) Wyune 0.56  
 10.8 gals gas 2.58  
 Lunch 0.72  
 Grease job, Batesville 1.25  
 Supper 0.67  
 53  
 72  
 167  
 1.95

July 19 Breakfast 0.30

To go to Searcy Spring Lake  
 Ark. 11 <sup>4.8</sup> miles from  
 intersection on N. edge of  
 Batesville to Baptist Church  
 then turn on side road.  
 Supper 0.72

July 20 Breakfast 0.67  
 Gas 7.1 gals. Batesville 1.70  
 Good exposure of Ruddell on  
 NW side intersection at Oneal  
 about 12 miles W. of Batesville  
 Lunch 0.57  
 Supper 0.82  
 0.67  
 5  
 1.42  
 2.09

Afternoon collected under trestle  
 over Arkansas 106. Here along ark 106  
 to east a nearly complete section  
 of Moorefield is exposed. Shaly ls.  
 overlies Boone but above this is  
 fossiliferous Boone-like chert up to  
 bend in road near top of hill. Just  
 below top of hill. Leptothyrids is  
 abundant. Hill is held up by a  
 thick sandy ls. with Lingula which  
 is the very top of the Moorefield.  
 The Ruddell lies on top of this bed



(3)

July 21. Breakfast

0.56

Lunch

0.52

Gas Smithville, Ark. 9 gals.

2.07

Supper

0.68

Mileage Batesville Sunday night

59/30.

Room Batesville 4 nights

6.00

On morning went to  
 Morrifield to see shale. Then  
 went on to Black Rock, Amboden  
 and Smithville to see Lower  
 Ordovician.

July 22 Breakfast

0.61

Gas, Oil Conway, Ark

2.85

Lunch Clarksville, Ark

0.61

Gas Webbers Falls, Okla

2.20

Room 3 nights Muskogee

6.00

Supper

0.45

Left Batesville 6:30 A.M. arrived  
 Muskogee about 4:15 P.M.

July 23. Breakfast

0.61

Lunch

0.56

Supper

1.52

Collected Mayes east of Fort  
 Gibson all day.

2.69

July 24 Breakfast

0.31

Supper

0.07

Collected south of Glendale  
 school all day.



(4)

July 25 Breakfast ~~0.41~~  
 Gas Muskogee ~~2.08~~  
 Lunch, Prague, Okla ~~0.70~~  
 Gas Norman, Okla ~~2.22~~  
 Promised to send Decker  
 exchange This fall.  
 Supper Sulphur, Okla ~~1.07~~

July 26 Room, Sulphur, Okla ~~2.55~~  
 Breakfast ~~0.51~~  
 Lunch ~~0.50~~  
 Gas, Gainesville, Texas ~~2.12~~  
 Supper, Fort Worth. ~~1.75~~  
 Collected White Mound, Rock  
 Crossing. Called on Kenfros in evening.

July 27 Breakfast ~~0.95~~  
 Room Fort Worth ~~2.20~~  
 Car storage ~~0.50~~  
 Gas Temple, Texas ~~2.66~~  
 Lunch ~~0.50~~  
 Grease, change oil, Austin ~~2.50~~  
 Supper at Barnes.

July 28 Breakfast ~~0.60~~  
 Room Austin ~~2.10~~  
 Gas Fredericksburg ~~2.12~~  
 Lunch ~~0.95~~  
 Gas, Ozona ~~2.25~~  
 Room, Fort Stockton ~~3.00~~  
 Supper ~~1.10~~



(5)

July 29.	Breakfast	<del>0.55</del>
	Hammer handle	<del>0.25</del>
	Water bag	<del>1.00</del>
	Lunch	<del>0.69</del>
	Supper	<del>0.70</del>
$\begin{array}{r} 55 \\ 69 \\ \hline 70 \\ 1.94 \end{array}$		
July 30	Breakfast	<del>0.55</del>
	Lunch	<del>0.55</del>
	Gas	<del>2.64</del>
	Supper	<del>1.00</del>
Collected all day at 706 + 706e		
7 Hammer Handle, Chisels		<del>2.45</del>
July 31	Breakfast	<del>0.45</del>
	Lunch	<del>0.55</del>
	Supper	<del>1.00</del>
Collected all day at 702 c.		
Aug. 1	Breakfast	<del>0.60</del>
	Lunch	<del>0.30</del>
Springs bed is 490 paces SW of bend at top of hill opposite storage reservoir on hill to S. From a point 490 paces SW it is 123 paces NW of road (at right angle to road.		
Supper		<del>0.95</del>
Gas + oil		<del>2.30</del>
703 d - In platy limestone some 15-20' above Antelope bed inside bend of road at head of canyon on way to Split Tank.		



(6)  
Aug 2 Breakfast

~~0.80~~

Dolomite just above granite  
has is  $\frac{1}{2}$  mile by road  $\pm$   
of gate at large tanks:

80

80

100

Lunch

~~0.80~~

Repair fire

~~0.75~~

Gas Alpine 8.7 gal

~~2.15~~

Hooks for packing

~~0.85~~

Lumber & Hammer handles

~~4.29~~

Wedges for handles

0.10

Supper

~~1.00~~

Aug 3.

Breakfast

0.70

Lunch

0.46

Supper

1.00

Laundry

1.00

326 Box 1. - 706e-1; 703d-1; 706-2;

703c-2.

387 Box 2 - 706e-3; 702-1; 703c-2.

Aug 4 Breakfast

~~0.45~~

Lunch

~~0.85~~

Supper

~~1.35~~

2.65

303- Box 3- 706e-2; 702-1; 703c-1.

280-Box 4- 706-3

365-Box 5- 702c-1; 706e-1; 707a-1

315-Box 6- 702c-3

319-Box 7- 706e-1; 702c-1; 703d-1;  
703c-1; 702-1.



7.4  
 192  
 254  
 274  
 280  
 290  
 323  
 310  
 319  
 315  
 365  
 280  
 303  
 387  
 326

4218  
 240  
 369  
 249  
 205  
 3

5281  
 46  
5327

3798

18  
 30  
540

5281  
 540  
4741



⑦

- 310-Box 8 - 702C-3; 703d-1.  
 323-Box 9 - 702C-3; 703C-1; 702-1.  
 290-Box 10 - 703C-3; 702-1.  
 280-Box 11 - 702C-2; 703C-1; 702-1.  
 274-Box 12 - 702C-1; 702-1; 703C-1;  
                     706-1.  
 254-Box 13 - 702C-2; 703d-2.  
 192-Box 14 - Miscellaneous + Decid  
                     Scacchinella bed.

L. O. Kennedy - Marathon, Box 144  
 Send card of Museum.  
 Score -

706e - 1, 3, 2, 1, 1,  
 703d - 1, 1, 1, 2.  
 706 - 2, 3, 1,  
 703C - 2, 2, 1, 1, 3, 1, 1,  
 702 - 1, 1, 1, 1, 1, 1, 1,  
 702C - 1, 3, 1, 1, 3, 3, 2, 1, 2,  
 702e - several small blocks  
 706c - 2, 1,  
 706d - small  
 706b - 1  
 701d - 2, 2  
 701g - 1  
 701e - 1  
 707a - 1  
 707h - 1

8  
 5  
 6  
 11  
 7  
 16  
 3  
 3  
 1  
 1  
 4  
 1  
 1  
 1  
 1  
 69



8  
Aug 5 Breakfast

0.45

Lunch

0.65

~~Supper~~

1.00

Cart boxes to station. Collected  
at elbow of Hess Canyon in  
afternoon

Aug. 6. Breakfast

0.45

Lunch

0.45

~~Supper~~

1.00

Gas

1.74

240 Box 15 - 706 c - 2; 706d several  
small

702c - Point of hill, 1.15 miles  
S21°E of divide on road to Old  
word Ranch, point of hill and  
south of Mtn front for 1/4 mile.  
Mostly beds with *Rhipidomella*  
Hess fossil bed of King. It is  
also 1.35 miles S50W of  
Leonard Knob 702c.

Rain in morning. We packed  
and set up the remaining  
boxes.

Aug 7 Breakfast

0.45

Lunch

0.41

~~Supper~~

1.00

Collected on Wolfcamp Hills  
all day. Mined on way in and out



(9)

7019 - Orthotichia bed at head of branch of canyon flowing north into main canyon. This material is considerably under the beds forming the dip slope of west side of this tributary canyon.

Aug 8	Breakfast	0.45
	Lunch	0.69
	Supper	1.00
		<hr/> 2.14

369 Box 16 - 706b - 1; 701d - 2; 701g - 1; 702d many; 702e many

249 Box 17 - 706c - 1; 701g - 2; 701c - 1.

Collected 702d in morning; packed two remaining boxes in afternoon.

Aug. 9.	Breakfast	0.45
	Lunch	0.50
	Supper	0.85
	Laundry	1.25
	No receipt	

205 Box 18 - 707a - 1; 707b - 1; 707a - many small.

46 Box 19 - tools

Service car	3.45
Haul boxes to station	1.28
11 night's marathon	20.00



(10)

Aug 10.

Breakfast

Lunch

Supper

Gas Decos

Speedometer at Marathon

Gas Artesia, N. Mex.

Arrived Alamogordo, 6 P.M.

~~0.40~~~~1.25~~~~0.85~~~~2.50~~

59.072

1.92

Aug. 11.

Breakfast, Lunch

2 nights, Alamogordo

1.33

4.08

Went to canyon due east of N. Mex. school for blind, about  $3\frac{1}{2}$  miles east of N edge of city.

Walked up canyon about  $\frac{3}{4}$  mile. Sly Gap exposed as yellow, silty ls breaking down into cobbles.

Dark silty shale beds present. Overlying Sly Gap comes Caballero fm. equivalent of The Chontean.

This is cobbly gray - blue gray ls. containing fresh fossils.

Aug 12.

Breakfast

Gas oil

Gas Denning

Lunch

Supper

~~0.51~~~~2.69~~~~1.72~~~~0.95~~~~1.17~~

Collected Percha at Georgetown N. Mex. all afternoon. To get to this place go to Santa Rita. Take left fork going NE at east edge of Santa Rita for seven miles. Locality is just N of the hair pin loop at Georgetown in Silver City  $\square$ .



①

Aug 13. Breakfast 0.95  
 Lodging, Silver City 1.78  
 Gas, oil Bayard 2.50  
 Lunch 0.56  
 Supper 1.00  
 Lodging, Springerville, Ariz. 1.50  
 Gas, Lynn. N. Mex. 3.00

~~Aug 14~~. Collected in morning at a fine  
 Percha locality exactly 4 miles <sup>E NE</sup> east  
 of east edge of Santa Rita, about  
 center road 175 + 111 at very edge of  
 Silver City □. The locality is 1/8 - 1/4 mi  
 north of the highway.

Aug 14 Breakfast 0.56  
 Gas 2.70  
 Lunch 0.61  
 Groceries 1.00  
 Lodging Grand Canyon 1.40  
 Supper 1.25

Aug 15 Breakfast 0.71  
 Gas, Grand Canyon 3.30  
 Lodging, Jacob Lake 2.78  
 Supper, Jacob Lake, Ariz. 1.16  
 Standed Jacob Lake with bad fuel pump.

Aug 16- Breakfast 1.01  
 Gas + oil 3.22  
 Supper, Cedar City, Utah 0.90  
 Service car, change oil Cedar City 5.49  
 Lodging, Cedar City 2.00

Aug 17 Breakfast 0.50  
 Gas, Pioche, Nev. 1.80  
 Lunch, Ely, Nev. 0.80  
 Supper 3.00  
 Arrived Eureka 3 PM



(14)

Look up collections of Little Oak  
and Odenville collected by Cloud  
and Bridges in 1943.

Aug 18 Devils Gate, barbecue in evening  
at Mitchell at Ruby Hill. 0.45

Aug 19. Breakfast 0.65

Windfall Canyon

335'

226'

115'

Ca 500'

78'

120'

Gray granular cherty ls. in beds up to 1'  
separated by thinner ls. beds. fossils none

Mostly covered but evidently platy & bedded  
to up to 4", gray in color. Looks E

Massive bedded light gray ls., blocky fracture

yellow weathering, thin platy ls., gray blocky in  
fresh fractures, of tan light red on plates

78' similar to below but more compact, and  
zone I - Dark blue platy ls. weathering  
reddish, yellowish & brown but with  
patches of blue

Dunderberg

Hamburg dol.

Nemontis was seen on nose  
of hill over road about 50'-100'  
above Elkemia Thick bed.

with 10'-12' massive layer at base



Aug 20

(13)

Up hill  $55^{\circ}$  E from Car 3-195  
 Finnie. This corner is in ravine  $N10^{\circ}$  W  
 from water tower at Ruby hill and due  
 5' of peak at head of draw. Rock from  
 pit at corner is ribbon banded, thin-  
 bedded platy ls, dark gray when fresh  
 but weathering yellow.  
 At about 102' above pit comes ledge  
 of dark gray thin-bedded cherty ls.  
 welded into massive ledge. Hackly  
 fracture  
 102' - 113' - same, black chert.  
 113' - 150' - covered  
 150' - 177' Gray ls. weathering drab  
 gray, thin-bedded with layers of  
 dark gray chert about 1-4" thick. Trilobite fragments  
 on loose plates.  $N32^{\circ}$  E  $30^{\circ}$  S. More  
 massive at top and thicker bedded.  
 177' - 195' - covered  
 195' - 206' - Ledge of light gray  
 hackly fracturing ls., thick bedded.  
 suggesting base of zone 3.  
 206' - 233' - top of hill in same ls.  
 Long dip slope on SE side  
 Prospect quartzite on hill opposite  
 whole slope to crest



(14)

Aug. 21

2nd block to N

Windfall (Ridge SE of Hamburg Mine)

Zone 1. Weathered surfaces predominantly blue with pink & purple patches. Platy, conchoidally fracturing when plates are separated. Fresh fracture finely brachy, dark gray. Contains massive beds, very finely granular, almost smooth in fracture. Contains some banded dark gray - black chert that weathers dark or light yellow brown. Banded layers often welded into masses but fracture platy. Layering very irregular & layers separated by irregular silicious layers.

Zone 2 - Platy, predominantly yellow - weathering, light yellow to light gray in fracture, usually finely to moderately coarsely granular. Some plates fracture mouse gray, usually sparkling from calcite grains.

Zone 3 -

1 - 85' heavy-bedded ls., dark gray fine-grained brachy fracture. Layers from 1-3" up to 2-3'. Chert uncommon scattered and bedded. Sections of fossils numerous. *Elkania* in lower part. Bedding wavy when seen on surface.

2 - 30' - Thin-bedded ls., yellowish surface, irregular bedding. Many *Trilobite* fragments. Layers up to 4" J

3 - 10' - Dark-weathering gray, heavy bedded ls. Mostly chert free where seen.

4 - 25' - Thin & thick bedded ls. with "oolites" at top. Section ends on long covered slope.



(15)

On east slope of N end of ridge  
SE of Hamburg mine Naftorthis,  
Leiostridium and associates occur 75'-  
100' above the massive ledge at  
base of zone 3. Schizambon occurs  
in platy ls about 15' above the  
Leiostridium and is thus definitely Ord.  
Schizambon occurs in beds with  
Leiostridium.

Aug 22 Gas Eureka, Nev. 3.00

Aug 24 Lodging 1 wk. 20.00

Aug 29 Laundry 2.00

Aug 31 Nails & glue 0.35

Newspaper for wrapping fossils 0.20

Rope 0.50

Ware 0.20

Sept. 2 Collected up Copenhagen on north  
slope of hill 8.16.7 in Martins Ridge  
Lower beds in black shale containing  
Brimnia, Leptellinga, Reuschella. Higher  
beds contain impure limestone with  
Spirifer in lower part, followed by  
Oxoplectra, Balobia. Above this beds  
are very impure, mostly a ss.  
lumpy and like the Oranda. This  
contains Reuschella, Sowerbyella and  
a few other brachs. Just above  
Reuschella comes Cryptolithus.

Sept. 3 Dinner 1.20



0723

Sept 5 19 days board 33.25

Sept. 6 Mileage on departure from Eureka 61629

Lunch 0.25

Mileage in Salt Lake City 61980

Aug 7 Breakfast 88 0.90  
Lunch 26292 0.40  
9

Aug 8 Fare to airport 0.75  
Porter Chicago 0.50



13

0724

①

Trips Central Texas  
February 1946

- Feb. 1. Purchase \$1.40 in Travelers Cheques 1.05
- Feb. 7. Left Washington on National Limited  
at about 6:45.  
Taxi to station 0.30
- Feb. 8 Breakfast 1.15  
Lunch 1.10  
Supper 1.70  
395
- Feb. 9. Below Paley line going coming  
down in torrents. All this part  
of Texas a quagmire  
Breakfast 1.15  
Lunch 1.40  
Baggage 0.40
- Feb. 10. Arrived Austin on train 4:05  
Met by Preston & Barnes, went  
to Bureau for two hours then to  
the Cloughs for the night.
- Feb. 10. Spent day at Austin, morning at  
Bureau, afternoon in Memorial  
Museum. Evening had dinner with  
a large group from Texas U.  
Dinner 1.50
- Feb. 11. Left Austin about 8:30 AM. went  
to Honeycut bend on Pedernales R.  
E of Johnson City. Collected there  
in morning from lower heavy ledge  
of Pennsylvanian which rests on  
the shales and includes the  
Marble Falls spiculite.  
Afternoon collected some horizon  
near Honeycut Spring. Here  
found large *Spizella*, *Protonotaria* and  
*Borealis* 1.70



Owe P.E.C., 1.75 Room in House  
1.70 lunch materials

P.E.C. owes me 1.25

---

\$2.20



②

and *Brytonia*, the latter suggesting the ones from the Barnett shale.

Went to Marble Falls ~~and~~ and examined the sequence on the south side of the gorge of the Colorado R. Found few fossils.

Feb. 12 Lodging Feb. 11 - 1.50  
 Supper " " - 0.80  
 Breakfast " 12 - 0.60  
 Supper " 12 - 0.85

Collected Smithwick shale at Bend, then collected zones of Barnett shale  $2\frac{1}{2}$  miles SSE of San Saba. *Rondelites* common in thin beds throughout section. Small *Trinopodites* & *Leiorhynchus* common in top 2'.

Lodging, Llano 1.75

Feb. 13 Breakfast 0.75  
 Lunch San Saba 0.45  
 Supper 1.00

Bought 10 lbs. pecans 2.50

Left Llano for San Saba. Collected Barnett on road north of Llano. Collected Marble Falls on Texas 16 about  $2\frac{1}{2}$  miles S of San Saba. A shale with *Chonetes* is underlain by a limestone containing *Spirifer* and *Derbyia*. The two collections are to be kept separate.

Lunched at San Saba.  
 Went to morning collecting.



③

place on big Slown Ranch and  
visited Kupfers "Boat Tank" on  
same ranch NW of river crossing  
(Maxwells crossing). First place  
the Merrow is bituminous ls.  
with many Manginifera.

Night at Brady

Feb. 14

Breakfast

0.75

Lunch

0.60

Supper Brady

1.00

Following 2 nights (Brady)

4.00

Morning went north of  
Brady to collect Pennsylvanian  
fossils at Tife. Afternoon  
collected Chaptal & Hamburg  
from sinks on San Saba River

Feb. 15

Breakfast

0.55

Lunch

0.65

Supper

1.00

Collected all day at TF 406  
locality

Feb. 16

Breakfast

0.70

Kegs (16)

1.20

Supper

0.50

Collected all day on Barnett  
limestone on large area in  
Bear Spring area. TF 422  
of Cloud.



- ④ Feb. 17-  
 Feb. 17 Breakfast 0.35  
 Lunch 0.70  
 Supper 0.95  
 Collected at White Crossing 10 mi  
 SW. of Mason, Texas.
- Feb. 18 Breakfast 0.75  
 Supper 0.55  
 Spent all day at Barton Ranch see  
 1, #3200' S 1/4 W of White Crossing
- Feb. 19. Breakfast 0.55  
 Lunch 0.36  
 Supper  
 Hotel (Mason 4 nights) 9.50  
 Barton Ranch sec. No. 2. in morning  
 Here *Leirlynchus* occurs low in the  
 Burlington sequence.  
 Afternoon went up Honey creek  
 about 1/2 mile above rock cabin  
 to collect Chappell. Returned to  
 Mason about 4:15. Left for  
 Austin about 4:50.
- Feb. 20. Lunch 0.40  
 10 kegs 0.75  
 Bags to head kegs 0.50  
 Spent most of day packing &  
 shipping 16 bags.
- Feb. 21. Lunch 0.90  
 Supper 1.05  
 Fare to Washington 73.51  
 5 nights in Austin 10.00  
 Spent day about Austin in collection



5

Kegs

No label ~~TF~~ TF 422 Barnett, E side Bear Sp. and  
~~✓~~ " " " " " " " "  
~~✓~~ Whites Crossing  
~~✓~~ " "  
~~✓~~ 3200' S 140° W of Whites Crossing  
 ✓ { ~~✓~~ Pennsylvanian +  
~~✓~~ "  
~~✓~~ 8-  
~~✓~~ 9-  
~~✓~~ 10-  
~~✓~~ 11-  
~~✓~~ TF 406  
~~✓~~ 13 TF 406  
~~✓~~ 14 TF 406  
~~✓~~ 15 TF 406, 417  
~~✓~~ 16 Misc. Barton Ranch see 2

Feb. 22 - Left Aust in on 10:10 Train  
 or Limestone Special.  
 Lunch  
 Supper

1.15  
 1.70

Feb. 23 Breakfast  
 Lunch  
 Supper

1.12  
 1.60  
 1.75

4.47

Feb. 24 Breakfast  
 Taxi to home

1.00  
 0.40



1947

October 26 - Left Washington 8:50 on  
Tennessean and arrived Knoxville at  
9:45 Central time. Met Al.

Taxi

0.95

Lunch

1.80

Supper

2.00

Tip to porter

0.25

Oct. 27 -

Breakfast

0.46

Supper

1.12

Room 3 nights

10.50

Friendsville

Oct. 28

Breakfast

0.56

Lunch

1.05

Supper

1.63

Visited Friendsville with Phil King,  
J. Bridge, J. Dunlap. Granular  
beds behind Quaker church are  
assigned to Mosheim by Dunlap. A  
swale in Knott is filled with  
bottom sweepings and overlain by  
Mosheim. Dunlap favored the idea  
that the calcarenites are really  
Mosheim. Dunlap took us to a place  
1 1/2 miles N of Friendsville on  
East edge of Concord sheet. Here  
Knox is overlain by Mosheim lithology  
and Lenoir lithology within short  
distances. In other words Lenoir  
and Mosheim occur together. The  
evidence is clear that Mosheim  
is Lenoir.



(2)

Oct. 29 -  
Breakfast  
Supper

0.61  
1.27

Spent day trying to locate fauna in Serian in vicinity of Friendsville. Gosseneck fauna not same as Miser according to Al. A mile from Big Spring we collected brachiopods in high Serian. That suggested Benbolt. In afternoon debated roads at Meadow, Rega and McMullen.

Oct. 30.  
Breakfast  
Lunch  
Supper

0.66  
0.78  
1.48

Morning visited Lenoir at Lenoir City and Philadelphia and went on to Christiansburg. Afternoon Al and I ran roads south of Athens. Found a Sowerbyites zone in a sort of Biohermal mass about 1 1/2 miles south-southeast of Athens. Irregularly bedded limestone, very impure in yellow - weathering blue. Contained Multicostella, Cytonotella, Dinorthis and Sowerbyites. The latter is small and very fine-lined.

Nearly 3 miles south of Athens found nodules in yellow shale containing Dinorthis like wellardi and Oligorhynchias. These two localities are extremely suggestive of Hogskin but some of the species and assemblage are not quite like the Hogskin.



3

0731

Oct. 31 -

Breakfast

0.77

Lunch

0.45

Supper

1.78

Folding

3.50

Visited Heiskell and saw sections around Fleenor Mill.

Nov. 1 -

Breakfast

0.82

Supper

1.60

Call Phil King twice

0.60

Visited Hogshin Valley and Evans Ferry. Moore's students found *Oligohynchia* just under or over *Sowerbyella* bed opposite big white house in Evans Ferry section. I failed to find any but did see abundance of *Alectocamans* at the same horizon. This puts these two genera as high as Wardell.

At Rose Hill Charley Wilson thought the beds between Curdsville and the thick Bentonite is upper "upper" Carter. The Witten and Moccasin are undoubtedly related to Lebanon and Carter. Moccasin may = Lebanon.

We saw *Widulites* in the Rose Hill section. Tenn.

Beds on Tenn 33 about 1.7 miles NNE of Holls X roads are in the "Hogshin".



④

November 2-

Breakfast

1.00

Lunch

1.05

Supper

1.53

Visited Hagan section, Wilson. Thought upper Merossian with fossils is Carters, and Eggleston between. The Bentonites is upper Carters. Top of Eggleston is about 5' above top Bentonite. Most of our collections are from below almost thick Bentonite.

Call to Phil King

0.30

November 3-

Breakfast

0.77

Call Byron Cooper

0.55

Supper

1.73

Sent off boxes, went to Morristown and Bull Gap. Oligorhynchia beds in Bull Gap occur on east side road as far south in gap as second house from church in gap.

November 4

Breakfast

0.61

Lunch

0.61

Supper

1.53

Visited Red Hill, Sowerbyites beds lowest part of Hogskin, followed by Drinthis in abundance which extends to about middle of formation. Oligorhynchia in upper half.

Afternoon went to Lee Valley



⑤

for O. Hesse. Lower Benbolt  
contains *Paleostrophomena* and  
*Bygonia*. Best locality about 1.4  
miles NE of Lee Valley and 0.1-0.2  
miles north of road.

Nov. 5

Breakfast

0.72

Lunch

0.56

Supper

1.53

Tip

0.25

Room Morristown, 2 nights

4.50

Rye Cove and vicinity.

Nov. 6. Visited Hansonville and  
BN Cooper.

Hotel Abingdon

2.50

Breakfast

1.15

Lunch

1.06

Tip

0.25

Nov. 7

Breakfast

0.85

Lunch

0.90

Supper

1.60

Hotel Blacksburg

2.50

Went from Blacksburg to  
Harrisonburg. Visited Duhon and  
Church & Section SE of  
Harrisonburg.



0734

Nov. 8

Cabin Harrisonburg

2.00

Breakfast

0.85

Lunch

0.75

Supper

0.80

Sections from Harrisonburg  
to Strasburg. Arrived Washington  
9:00 P.M.



0735

October

1948

79423

Grease job 79612.

Oct. 9.

Left Washington 7:30 AM.

Milage 79423

Lunch Lexington

Wrecking bar

Gas, oil, grease job, Lexington

Gas Wytheville, Va

Supper

Room, Abingdon, Va

Breakfast

Intercession 3.55 - 2.65 = 0.9 mile

to Sowerbyites bed south of Athens

93.55

Gasoline (Knoxville, Tenn.)

Lunch (Lenoir City)

Tip

Supper

Room, Athens, Tenn.

✓ 0.65

✓ 0.65

✓ 6.99

2.10

Tip .25

1.65

3.00

✓ 0.75

Oct. 10.

Intercession 3.55 - 2.65 = 0.9 mile

to Sowerbyites bed south of Athens

93.55

Gasoline (Knoxville, Tenn.)

Lunch (Lenoir City)

Tip

Supper

Room, Athens, Tenn.

✓ 3.03

✓ 0.68

✓ 0.70

✓ 1.68

✓ 2.50

Oct. 11.

Saw good Lenoir ss between Lenoir City + Philadelphia, on both sides US 11

On Knox about 3/4 mi SE bottom Ch. Calhoun D are some 5-10' of red &amp; green shales, then about 250' covered on road to lower Athens shale with Riceville fossils

Breakfast

Lunch

Supper

Alhambra Court 3 nights

Repair carburetor

Gas Sweetwater

✓ 0.75

✓ 0.41

✓ 1.50

✓ 6.75

✓ 2.45

✓ 2.15

Early in morning visited section on Hiwassee River SE of Charles Town, Clistiania beds culminating in peculiar oolites suggest assignment to the

75

168

68

311

1.16

1.50

266



Whiteburg. At locality about 5 miles NE of Charleston (3/4 miles SE of Britton Church). The Knot is 300' east of road intersection. It is followed by 5' of variegated red & green sh (red at base, green at top). Then 250' are covered when the brown sandy shale of the Beeville beds appears. Above these are black platy limestone of the Athens. The sequence is thus very much like that at Charleston as regards the Christiania beds.

It is interesting to note that Keith on the London Sheet pushes the Athens out between the south west edge of the map and Christiansburg. The passage to limestone is not complete here but does become complete at Friendsville.

At the Britton Church place, as at Charleston, the Christiania beds could be set out as a member.



Oct. 12

(3)

Breakfast

0.51

Lunch

0.77

Supper

2.07

Morning collected at Negro Cemetery on east side of Friendsville. Went to Friends Church. Opposite church in ditch are red & green shaly rocks, similar to those seen SE of Button Church locality. Possibly it is rotten dolomite, possibly Shaleford. It is not exposed behind the church.

In the section 1 mile NE of Friendsville about 10' above the Valcouria granular ls. occur large spongyites-like brachiopods suggesting the Plectambonites ampullus of Raymond seen abundantly at Christiansburg. No Christiania occur with them and I assume them to be a different species.

In the section on the south side of the road the Billingia beds are beautifully displayed. They appear just above the granular Valcouria beds at the edge of the woods on the beginning of the east slope of the first hill which is composed of the Mosheim. Billingia occurs commonly on east slope of second hill just west of stream & house. The west slope and top of the hill just east of the first house are composed of blue-gray shaly ls. On the east slope of this hill the Christiania come in by the thousand but no perceptible lithological change occurs.



0738

(4)

Oct. 13

Breakfast

0.72

Lunch

0.46

Supper

2.03

321

Check Stroph. mesleri for  
a specimen from Hogskin from  
Fleming Hill. This is not  
Hogskin but *S. tennesseensis*  
from road brought into field

Repair rear tire

2.75

Gas Knoxville

2.32

Oct. 14

Breakfast

1.00

Lunch

0.46

Supper

2.03

Room (one night) Knoxville

2.25

Phone Call to Blacksburg

1.00

No Hogskin east of Mt. Eager  
Church over to Liberty Hill.

In Wardell 0.3 miles SW of  
Little Barren Church is a fine  
display of *Stromatoceras* just  
under Heperorthus beds, a  
conspicuous band of red rocks  
occurs well under (100' or more)  
under the Heperorthus.

The Belt of The Rose Hill  
Jenn. Belt is like that at  
Lone Mtn.



October 15

(5)

Breakfast

1.00

Lunch (2 days) 18+69

0.87

~~Supper~~

1.61

Bob Morristown

2.36

Visited St. Clair, Otes & Whitesburg. Big sink between Og and St. Clair shows fairly thick layer of calcarenite or Effra limestone. The calcarenite is overlain by shale. Several cobbly (3) layers, bands, seem definitely to be sandwiched in the shale.

The Otes cut suggests Whitesburg rather than Athens. Found Trinodus and Pontecopus.

Oct. 16

Breakfast

0.81

Lunch

0.00

~~Supper~~

1.65

Bob Morristown, Tenn.

2.20

Went to Edison. Lincolnshire shaley band with *Dinorthis atavoides* is very suggestive of Hagerman lithology. The rock also suggests cobbly Lenoir but is much yellower.

*Paleostrophomena* is not at the base of the Benbolt but is near the base. The Wardell here is also quite suggestive of the Lone Mtn. Belt.



Oct. 17	
Tip at Middleboro	0.25
Breakfast	1.00
Lunch	0.00
Supper	1.65
Room Morristown nights	5.00

Visited Horn Hill - Evans Ferry belts. At Evans Ferry the grunoids come from just above Lowerbyites. Most of the Strophomena (large) are from above Hesperonthis.

Oct. 18	
Breakfast	0.75
Lunch	0.44
Supper	1.70
Store car	0.75
Grease car, gasoline	3.46

Visited Hagan + Station Creek Co.

Oct. 19	
Carter barn loc. is 0.55 mi NE of A	16.44
Room nights, Middleboro, phone	0.50
Car repair	0.80
Breakfast	0.44
Lunch	0.30
Tip	1.65
Supper	0.75
Car storage	



0741

(7)

Oct. 20

Breakfast

0.70

Lunch

0.12

Supper

1.65

Gas and oil, Abingdon

2.45

Car storage

0.50

At Eye Cove, Carters barn locality, shaly rocks form a bluff just down hill from the fossil bed at the barn. In the lower part of this bluff Benbolt fossils appear. Furthermore Williams found *Strophomena*, like *S. tenuescens* just down road from west angle of triangle opposite garage.

Visited Tumbley and Hansonville localities

Oct 21

Breakfast

0.70

Lunch

0.38

Supper

with B. N. Cooper  
Lodging 2 nights Abingdon.

7.00

Telephone

0.81

Car storage

0.50

Gas (Wytheville)

2.44



0742

Oct. 22

Tip  
Breakfast0.20  
✓ 0.75

Oct. 23

Car storage & antifreeze  
Hotel 2 nights, Blacksburg  
Breakfast✓ 2.00  
✓ 6.00  
0.75

Lunch

0.75

Supper

1.65

Gas, Buchanan Va

✓ 2.47

Blacksburg to Harrisonburg with  
visits to Dunkard Church & Green  
Mount Church

Oct. 24.

Breakfast

0.75

Lunch

0.95

Car storage, Harrisonburg, Va

0.75

Room, Harrisonburg, Va

3.00

Tip

0.20

Gas, Winchester

2.63



1948

July 9

5.00 room

.85 breakfast

1.15 lunch

2.40 gas to oil

Collected Montoya on Scenic Drive and LK in morning. Collected Haplostiche beds (Georgetown fm - Weno-Paw Paw beds) on Christo Rey Mtn, on slope over and above RR Tunnel, about  $1\frac{1}{2}$  mi E of Bowen, N.M. This is only local between El Paso & Frontier where H. texana occurs. Probably Conrads Type local.

H

10 July

.97 breakfast

3.22 gas

1.08 lunch

2.50 supper

Breakfast

Gas Bayard, N. M.

Lunch

Supper

0.97

3.22

1.08

2.50

4.55

July 11

Breakfast

Lunch

Supper

1.33

0.25

1.73

On July 10 visited locality at Georgetown and collected there all day.

July 11 went to locality 4 miles E of Santa Rita. Collected there about 3 hours. Collected on road  $4\frac{1}{2}$  miles E of Santa Rita, then collected a wash on south side of road 5 miles east of Santa Rita.

Collected at Bear Mtn. from 4 to 5:30 P.M. Take Bear Mtn. Lodge road N of Silver City, pass turn-off to Bear Mtn. Lodge and continue on main road to locality  $6\frac{1}{2}$  miles from Silver City. Percha is in bluff on N side of road.



July 12.

Breakfast 1.33  
 Lunch 1.58  
 Supper 2.10  
 telegram to Marathon ARL .90  
 9.8 Gas, car greased ARL 4.30  
 3 day room 13.77  
 23.98  
 Collected at Bear Mtn in morning. Drove to El Paso.

366  
 133  
 501

July 13.

Breakfast 1.20  
 Lunch ARL 1.70  
 Supper ARL 3.00  
 10.3 Gas El Paso 2.84  
 Gas, marfa, Texas 3.77  
 hammer handle and wedges .35

July 14

Breakfast ARL 1.20  
 lunch ARL .74  
 Supper ARL 3.55  
 Collected Word at Sullivan's Peak and Hess also.

July 15

breakfast ARL 1.40  
 lunch ARL 1.29  
 supper ARL 1.70  
 friction tape .15



July 15 - Split Tank -  
July 16.

breakfast

ARL 1.25

lunch

ARL .84

10 gal. gas

2.80

Supper

2.15

Collected on W side Split Tank  
and on N side road opposite Word  
Ranch

July 17

breakfast

1.30

lunch

1.11

supper

1.90

Hess Marathon

2.92

Lumber et al.

36.41

Quarry sacks

1.40

Groceries

1.65

Paint

0.15

Collected 706 C.  
Went to Alpine  
Packed boxes  
Car return.

July 18

breakfast

ARL 1.45

Supper

2.85

Collected Word ls #2 in morning  
Worked on slope N of Hess Ranch  
in afternoon. Packed 5 boxes. Box  
labelled Sponges is slope N of Hess Ranch.

July 19

breakfast

1.40

supper

2.00

Lunch

ARL .26

July 20

breakfast

1.40

lunch

0.76

supper

ARL 1.95



July 21

Breakfast

Lunch

Supper

Sub

A.R.L. 1.40

0.46

2.10

2.32

396

July 22

Breakfast

Lunch

Supper

Lumber for boxes

Hammer handle

1.40

1.70

1.85

11.29

0.89

Packed boxes all day - 25.

July 23

Breakfast

Lunch

Wire for tags

Supper

1.40

1.75

0.15

3.35

July 24

Breakfast

Lunch

Supper

Hauling boxes

Room 12 days

Laundry

Pencil leads

Mexican labor

1.50

1.25

2.25

4.00

60.00

6.65

0.05

0.50



0749

July 25

Breakfast	1.40
Lunch	2.15
Supper	1.50
Gas McCamey 13 gals.	3.72

Miss Earlene Fallis

Parkway Hotel

Marathon, Texas.

Gas Coleman	3.40
Room, Cisco	5.00

July 26

Breakfast	1.20
Grease job 4407	1.25
Lunch	1.55
Supper	2.15
Return Breckinridge	5.00

July 27

Breakfast	1.65
Gas Breckinridge	3.56
Lunch	1.00
Supper	3.10
Return Fort Worth	6.00

July 28

Breakfast	1.25
Lunch	0.37
Gas + oil	3.91
Supper	2.00
Cabin Jacksboro	4.50



July 29

Breakfast  
Lunch  
Supper0.95  
1.40  
3.50  

---

5.85July 30  
Breakfast

1.30

Supper  
10 gal. gas1.90  
ARL 2.39July 31  
Breakfast  
Lunch  
Supper  
Gas1.30  
1.40  
~~5.50~~  
2.772901 Bonham  
Ft. Worth 3, TexasAug 1.  
Breakfast  
Lunch  
Candy1.30  
4.10  
2.00

August 2

Breakfast  
Lunch  
Supper1.20  
2.05  
2.64Room + Laundry Ft. Worth, freight  
Gas, Ft. Worth27.17  
3.38



August 3.

On Spring Creek section, platy limestone between Hesperotthis and green bed sandstone. massive limestone is packed with Strophomena. This probably is about equivalent to the upper part of the section at Criner Hills (Rock Crossing).

Breakfast  
Lips  
Lunch  
Supper

1.22  
ARL 0.40  
2.10  
2.24

August 4

96

Arbuckle lay 2 blocks collected, East side OKla 18, 3 miles S of Nebo store, Carter Co., OKla. about center 2-3 S-3 E.

Oil Creek on OKla 18, 2 miles S Nebo store.

Sulphur locality is 1.8 mi. S of Sulphur.

At Sulphur locality, Sowerbyella is common on west side road at top of cut. Base of "reef" on west side road is very sandy. All beds on both sides of road belong to green shale interval of Brownide. On east side road not far over fence Hesperotthis occurs. Probably the Criner interval.



0752

August 4

Breakfast 1.21  
 Gas Sulphur 2.42  
 Room, Sulphur, 2 nights 11.22  
 Gas Muskogee, break job 4.43  
 Went one mile east from Ford.  
 Room Muskogee 2 nights 8.00  
 Supper 2.44

August 5.

Breakfast 1.48  
 Lunch 1.33  
 Supper —  
 Sacks 0.98

Aug 6

Breakfast 1.33  
 Lunch 1.38  
 Nails 0.46  
 Supper 2.40  
 Room, Vinita, Okla. 6.00

August 7.

Leeblich has \$14.83  
 Breakfast 1.22  
 Gas Vinita 3.87  
 Lunch 0.50  
 Room (Bartlesville) 6.00

Aug. 8

Lunch 1.58  
 Gas (Independence) + oil 3.47

Leebich's locality is 5 mi N  
 of Copan to A on US 75, 2 1/4 mi. E  
 of US 75, NE 1/4 SW 1/4 23-29 N-13 E,  
 Washington Co map, Okla.



0753

August 9.

Lunch	1.92
Gas Fairfax, Okla.	3.92
Supper Vinita	1.83
Rd m Vinita	6.00

Aug 10

Breakfast	1.12
Lunch	0.97
Gas Nowata	3.42
Cabin 2 nights (Muskogee)	10.00
Supper	3.06

11 2 1/2  
9 6 5  
3 0 0

August 11.

Breakfast	1.43
Lunch	0.93
Supper	2.55
Gas Tahlequah	3.42
Burlap sacks	0.70

91

Harrell L. Stunipke  
412 Wyandotte  
Bartlesville, Okla.

August 12

Breakfast	1.33
Lunch	0.54
Supper	3.00
Room 2 nights	10.00
Tip (dinner)	0.25

A.R.L.

Aug 13

Breakfast	1.32
Room job	1.00
Tacks, Hags	0.35
Lunch	1.15
Supper	3.11



0750

Aug 13 cont'd

Gas Muskogee

4.09

Aug 14

Breakfast

Lodging Muskogee

Lunch

Supper

1.28

5.00

1.74

3.56

5.58

On Aug. 14 Al had 14.58  
 Al turned over 20.00

Total to Al

34.58

Aug 15

Breakfast

Lunch

Gas, Tulsa

Check bags

Supper

Mileage 6990

168

97

365

1.12

0.53

3.89

0.20

0.97

Aug 16

Breakfast

Porter tip

Lunch

Supper

1.48

0.25

1.53

2.45

5.71



0755

①

Trip to Minnesota and  
Mississippi Valley 1949

June 15  
 Convert \$9.00 to travelers cheques 6.75  
 Purchase liability insurance 10.50

June 16  
 Sponge rubber for seat 3.00  
 2 Rucksacks 7.09

Mileage at 20740 start

June 20  
 Lunch 1.39  
 Gas Berryville, Va 15.1 4.47  
 " Clarksburg, W. Va 12.7 3.81  
 " Chillicothe, Ohio 12.7 3.57  
 Supper 2.42  
 Lodging, Hillsboro, Ohio 5.00

June 21  
~~Breakfast~~  
 Lunch

June 21  
 Breakfast 1.07  
 Lunch 1.20

June 22  
 Gas Springfield, Ohio 12.7 3.10  
 Lunch 1.03

Gas Dundee, Mich. 12.5 3.46  
 Supper 2.42  
 Lodging Dundee Mich 4.00  
 Collected Silica shale for 3 hours.

139

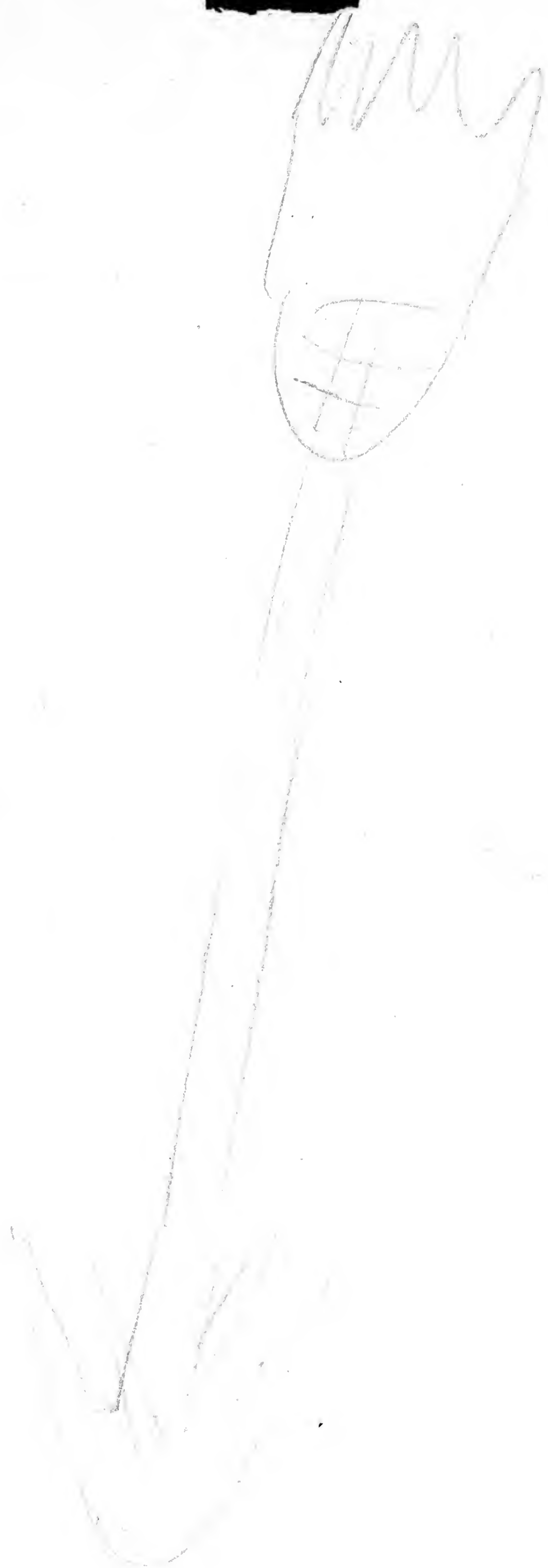
242

3.81

1.03

242







288  
96  
192

0756

(2)

June 23

Breakfast  
Lunch

1.13

1.45

3.34

5.92

See below

gas. Bay City, Mich. 9.0

lunch

Lodging Alpena (1 night) see below

Supper

Subseries

~~1.13~~

~~4.80~~

~~2.40~~

~~1.45~~

5.00

3.34

1.92

June 24

Breakfast  
Lunch

1.41

2.36

3.77

1.92

5.69

grease job

gas. Alpena, Mich. 11.1

Supper

Foot (for lunch)

~~1.41~~

~~1.63~~

~~1.00~~

~~3.12~~

2.36

53

June 25

Breakfast  
Supper

1.13

3.00

.53

4.66

~~1.13~~

~~3.00~~

June 26

Breakfast  
Supper

~~1.35~~

~~3.80~~

June 27

Breakfast  
Lunch

1.13

1.55

1.90

4.58

Supper

Gas.

Lodging 5 nights Alpena 11.2

~~1.13~~

~~1.55~~

~~1.90~~

3.13

3.14

25.00



$$\begin{array}{r} 3.35 \\ 1.38 \\ \hline 4.73 \end{array}$$



③

June 28

1.13  
1.44  
2.58  
5.15

Breakfast  
Lunch at Mackinaw City  
Lunch  
Gas, Manistique 13.4 gals.  
Supper  
Cabin Escanaba

~~1.13~~  
~~2.50~~  
~~1.44~~  
~~3.95~~  
~~2.58~~  
~~4.50~~  
16.10

June 29

0.93  
1.40  
2.25  
4.58

Breakfast  
Gas, Laona 12.5  
Gas Ladysmith, Wis. 10.2  
Lunch  
Supper  
Cabin

~~0.93~~  
~~3.73~~  
~~3.01~~  
~~1.40~~  
~~2.25~~  
~~4.00~~

June 30

Breakfast Lunch at Univ. of Minn. 0.90  
Cabin 4.00  
Gas 10. gal 2.96

July 1

Breakfast  
Lunch  
Supper

3.80  
0.90  
1.35  
1.55

July 2

Breakfast  
Lunch  
Supper

3.95  
1.10  
0.60  
2.25



④

July 2

$\frac{1}{2}$  mile sand east on road just at  
 south end of Cannon Falls, full section  
 of Middle Ord. St. Peter and Glenwood  
 exposed just east of junction with  
 U.S. Hy. 52. Mc Bugor well exposed in  
 small cys. about  $\frac{1}{4}$  mile east of  
 junction. Specht's Ferry on road-  
 side just beyond (east) of Mc Bugor  
 exposures. One mile east of junction  
 with U.S. 52 is an exposure  
 abounding in cup corals, *Rhynchotrem*  
*Drusotripsectinella*, and small  
 conical *Prasopora*. This I believe  
 to be Gutterberg. The same material  
 occurs on the N side of the  
 road about 0.1 mile east of  
 Gutterberg. Here *Pionodonta* is  
 fairly common with *Pessicella*.  
 On south side of road 1.1 mile  
 from intersection is a bank  
 with crumbly limestone which  
 overlies the Gutterberg material.  
 This contains *Clitambrites*,  
*Platystrophia*, *Rafinesquina*, etc.  
 is the Elora or Prosser.



(5)

July 3 -

Breakfast

1.35

Hill just east of Chatfield on Minnesota Hy 74. Top of platy ls contains *Eozygga* and *Rhynchonella*. In shale just above ls. comes abundance of *Doleroides* and *Rhynchonella*. The *Doleroides* are like the fine ones in the USNM coll. which are probably from this horizon.

Lunch

1.35

1.60

2.50

1.60

Supper

5.45

2.50

Cabin 3 nights

14.25

Send list to Charley Bell of species on which I need locality data.

July 4 -

Breakfast

1.00

gas

gal 9.4

2.81

Lodging Charles City

4.00

Lunch

1.02

Supper

1.89

1.00

1.02

1.89

3.91

July 5

Breakfast

1.02

Grease

3.88

Gas

10 gal }

Lunch

1.07

Supper

1.53

Cabin 7 nights Decorah

10.00

1.02

1.07

1.53

3.62



July 6

Breakfast

~~0.80~~

3/4 mile NE of Ft. Atkinson on Iowa  
24. good exposures of Ft. A. cherty ls &  
dolomite overlying greenish shale  
of the Clermont member. Few fossils  
in either formation.

Fayette Co map.

~~0.15~~

Lunch

~~1.15~~

Supper

~~1.84~~

Excellent locality for Clermont  
of Maquoketa just south of  
Turkey Creek opposite Eldorado,  
Fayette Co. Large Austriella common

July 7.

Breakfast

~~1.02~~

Bridge toll

~~1.00~~

Gas 18 gal 1 qt. oil

~~2.98~~

Lunch

~~0.75~~

Cabin, Mineral Point, Wis.

~~4.00~~

Supper

~~1.80~~

July 8

Breakfast

~~.95~~

Lunch

~~1.20~~

Cabin Galena, Ill.

~~4.00~~

Gas,

~~2.79~~

Supper

~~1.72~~

0.80  
1.15  
1.84  
3.79

Balance job 23/00

1.02  
0.75  
1.80  
3.57

.95  
1.20  
1.72  
3.87



(7)

Top of Plattville is marked by an 8' bed of blue clay. Under the clay occurs a zone of abundant *Palmadema* of large size together with a large *Doleroides*. Just above the shale occurs a flood of *Rafinesquina alternata*, large *Lowerbyella* and *Renssella*. This is mapped as base of Galena and is the Guttenberg of Kay. It also contains a large *Strophomena* called *S. subburnensis*. *Glyptothyrus* is abundant 5-10' above the blue clay. The large *Lowerbyella* and *Rafinesquina* suggest the shaly beds above the Plattin in Missouri.

July 9

Breakfast

Lunch

Phone to Iowa City

Telegram to Brandon

Supper

Room, La Salle, Ill.

1.04

1.22

0.90

0.55

1.92

4.00

July 10

Breakfast

Bridge toll

Lunch

Gas 12 gal. West Liberty

0.87

0.15

1.22

3.39

1.04

1.22

1.92

4.18

0.87

1.22

2.09



⑧

July 11

Breakfast

Lunch

Supper

Sabbath day

July 12

Breakfast

Lunch

Gas &amp; oil 7.6 gals.

Supper

July 13

Breakfast

Gas 12 gals. Vinton Iowa

Gas 8 " Keokuk "

Hotel 2 nights, Vinton Ia

~~Failed to take receipt~~

Supper

July 14

Breakfast

Room

Lunch

Gas 11.7

Supper

Hotel Palmyra

Cabin Barnhart (Kohler City, Mo)

1.02

1.33

1.69

7.73

1.02

1.33

2.31

2.11

1.02

3.45

2.24

5.50

1.84

0.97

1.40

3.00

2.33

4.08

3.08

1.02

1.84

Lunch 2  
1.33

4.19

0.97

1.40

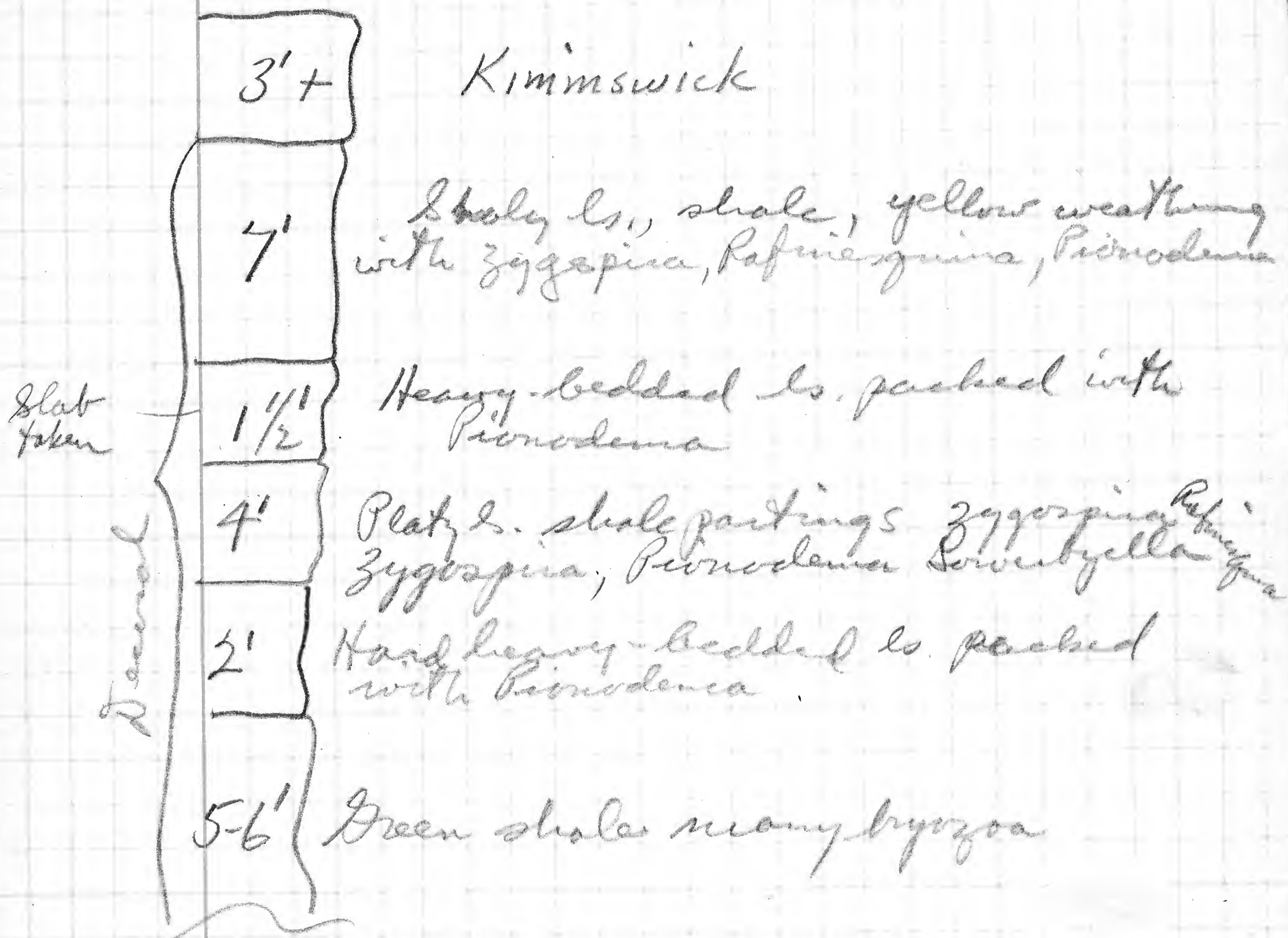
2.33

4.70



⑨

Kach Schuch



Abundance of Rafinesquina, Zygospira and Pionodema with large Sowerbyella date this as Guttenberg. It looks to me like the beds just overlying the Specht Ferry in Wisconsin.



$$\begin{array}{r} 11.25 \overline{) 1000} \\ \underline{9000} \\ 1000 \end{array} \quad (88$$



(10)

July 15

Breakfast

~~1.00~~

1.00.

Gas 8.1

~~2.10~~

0.89

Lunch

~~0.89~~

3.31

Supper

~~3.31~~5.20

Car service

~~6.47~~

Boxes up to July 15

Alpena Michigan

3

540 pounds.

Calmar, Iowa

2

314

Vinton, Iowa

3

560

"

Murfreesboro

2

400

"

July 16

1814

Breakfast

~~1.33~~

Room Cape Girardeau

~~4.34~~

Bridge

~~0.75~~

Gas Mayfield Ky 10 gals.

~~3.10~~

Cabin 2 nights

~~11.36~~

Gas Murfreesboro 12 gals.

~~3.84~~

Supper

~~3.00~~

1.20

1.33

3.00

5.53

On my collections of 1939 the  
 birds with *Sowerbyella*, *Zygospiza*  
*larga* *Hesperothraupis* are *D. leucorh.*  
 The *Campylorhynchus* is *Platyrh.*

Test mileage run start 61.05  
 End 10 mile strip 72.30

Mileage

11.25

Factor for correction

.88



$$1.1) 100 \begin{matrix} 909 \\ \underline{99} \\ 10 \end{matrix}$$

$$15) 10 \begin{matrix} 266 \\ \underline{90} \\ 10 \\ \underline{90} \end{matrix}$$

$$11 \begin{matrix} 5.66 \\ \underline{11} \end{matrix}$$

$$91$$

$$\begin{array}{r} 24600 \\ 88 \\ \hline 19680.0 \\ 196800 \\ \hline 2164800 \end{array}$$

$$\begin{array}{r} 24600 \\ 12 \\ \hline 49200 \\ 24600 \\ \hline 295200 \end{array}$$



(11)

July 17

Breakfast  
Lunch  
Supper  
Cabin

1.17  
1.33  
3.00  
5.66  
11.36

17.02 add

Large quarry in Ridley on S side  
US 705 about  $2\frac{1}{2}$  miles east  
of Murfreesboro. About 20' of rock  
exposed. Probably lower Ridley. Abundant  
in Tetradium and Stromatocellium.

The position of Readyville should  
be checked. The fossils we have  
come from just about  $\frac{1}{2}$ - $\frac{3}{4}$  mile  
east of the County line (Rutherford-  
Canon). Readyville itself is  
given as east of the Canon  
County line. Try to get a  
topo sheet for the locality.

At Readyville, *Sowerbyella* is  
abundant just above the  
*Cryptosporus* zone, not below  
it as previously supposed.



1136  
526  
1702



(12)

July 18

Breakfast

Lunch

Supper

1.28

1.30

2.04

4.62

Lebanon outcrop on US 41 is 9.6 miles SE of Murfreesboro. and 0.8 mile SE of Hurricane Creek = Knox Branch. The large quarry is 11.7 miles SE of Murfreesboro. The first locality is about  $1\frac{1}{4}$  -  $1\frac{1}{2}$  miles NW of Mt. Olivet. The material from latter place should be relabelled.

July 19.

Breakfast

Cabin 2 nights

Lunch

Gas Nashville, 10 gals

Supper

0.97

1.37

2.90

4.80

0.97

9.32

11.33

3.00

2.50

July 20

Breakfast

Lunch

Supper

4.79

1.11

1.18

2.50

Exposures called Leipers on 70N near Charlotte road are actually Catheys. The labels must be changed.



0767

1.20  
80  
200

13

July 21

Breakfast

Lunch

Supper

Gas, Linden, Tenn.

1.20  
0.90  
1.84  
3.94

1.20  
0.90  
1.84  
3.15

July 22

Breakfast

Lunch

Supper

3.23

0.92  
1.00  
1.31

July 23

Breakfast

Room 2 nights Linden

Gas Parsons, Tenn 12 gals

" Forrest City, Ark 12 "

Lunch

Supper

Gas + Oil, Arkadelphia 8 gals.

0.87  
1.22  
0.97  
3.06

0.87  
10.00  
3.74  
3.66  
1.22  
0.97  
3.01

July 24

Breakfast

Lunch

Supper

Return Arkadelphia

Gas Mt. Pleasant, Texas

Car Repair Arkadelphia

1.14  
1.24  
1.90  
4.28

1.14  
1.24  
1.90  
4.25  
2.81  
4.50



(14)

July 25

105	Breakfast	<del>1.05</del>
140	Hotel Greenville, Texas	<del>4.50</del>
205	Lunch	<del>1.40</del>
<u>450</u>	Supper	<del>2.05</del>
	Hardware & water bag	<del>2.76</del>
	Gas & grease job, Cisco, Texas	<del>3.92</del>
	Gas, Fort Worth, Texas	<del>2.92</del>

July 26

105	Breakfast	<del>1.05</del>
113	Room Cisco, Texas	<del>4.00</del>
245	Lunch	<del>1.15</del>
<u>465</u>	Supper	<del>2.45</del>
	for 2 boxes sent off from Cisco	

July 27

120	Breakfast	<del>1.20</del>
150	Gas	<del>2.80</del>
300	Lunch	<del>1.50</del>
	Room Sweetwater	<del>4.00</del>
	Gas Hobbs, N. Mex.	<del>3.05</del>
	Tire, wheel, fix car	<del>46.45</del>
	Cabin, Whites City, N. Mex.	<del>5.44</del>
	Supper	<del>3.00</del>



(15)

July 28

Breakfast  
Lunch  
Gas (White City)  
Cavern Trip

+1.53  
-1.00  
-2.79  
-3.00

July 30

Gas Pine Spring Camp, Texas  
Telegram to Parkway Hotel

+1.30  
-0.85

July 31

Lunch  
Gas, Van Horn, Texas  
Supper

+1.94  
-2.28  
-2.75

1.94  
2.75  
4.69

Squamulina blocks - mouth of  
McKittrick Canyon,  $1\frac{1}{2}$  mi. ESE of Section  
12 well,  $3\frac{3}{4}$  miles ESE of Pratt Lodge,

Middle La Mar ~~Guadalupe Peak~~ [?], Texas

Getaway limestone, S side US 62-150  
2 miles south of Pine Spring  
Camp, Texas.

at entrance to Guadalupe Pass  
Summit & radio station

August 1 M

Breakfast  
Lunch  
Supper  
Sax, Marathon, Texas  
& hammer handles

+1.30  
-0.97  
+1.90  
-2.38  
+1.78

1.30  
1.97  
1.90  
4.17



(16)

August 2 Tues

1145  
87  
215  
447

Breakfast

Lunch

Supper

Paint + brush

20 bags for packing

August 3 Wed

~~1.45~~  
~~0.87~~  
~~2.15~~  
~~0.85~~  
~~1.00~~

145  
104  
220  
469

Breakfast

Lunch

Supper

Lab, Marathon

9 burlap bags for packing

~~1.45~~  
~~1.04~~  
~~2.20~~  
~~2.80~~  
~~0.90~~

August 4 Thurs

140  
164  
200  
454

Breakfast

Lunch

Supper

27 bags for packing

15 sashes

125 shipping tags

Car service, gas, oil, tire

Blew out left rear tire

~~1.40~~  
~~1.14~~  
~~2.00~~  
~~2.70~~  
~~1.50~~  
~~0.50~~  
~~33.96~~

August 5 Fri

Breakfast

Lunch

Supper

Belt lacing (1)

458

~~1.35~~  
~~1.13~~  
~~2.10~~  
~~0.50~~

August 6 Sat

Breakfast

Lunch

Supper

Wire for tags

Laundry

480

~~1.35~~  
~~1.50~~  
~~1.95~~  
~~0.20~~  
~~4.73~~



(18)

2.25  
30  
20

August 7  
Breakfast  
Lunch  
Supper

~~1.50~~  
~~1.50~~  
~~2.00~~

August 8

Breakfast  
Lodging 8 nights Marathon  
Lunch  
Supper  
Gas, Fort Stockton, Texas 12.1  
" San Angelo " 11.3

~~1.60~~  
~~42.00~~  
~~1.05~~  
~~2.10~~  
~~3.37~~  
~~2.94~~

160  
105  
210  

---

475

August 9

Lodging Coleman, Tex.  
Breakfast  
Lunch  
Gas, Stephenville 11 gals  
" Gainesville 10 gals  
Supper

~~5.50~~  
~~1.05~~  
~~1.00~~  
~~2.75~~  
~~2.70~~  
~~3.46~~

185  
100  
346  

---

551

August 10

Breakfast  
Lunch  
Supper  
Lodging Sulphur

1.38  
1.33  
2.30  

---

5.01

~~1.38~~  
~~1.43~~  
~~2.30~~  
~~3.06~~



## Falls Creek - Baptist Camp

(19)

140

Lower part cobbly ls. with  
grayish shale, remainder greenish  
shale with ls. beds. Top 30'  
with *Sowerbyella*. I think this is top  
of green shale at Spring Creek

3'

massive cobbly ls.

30'

green sh with small ls. cobbles  
*Lingulella*, *Opikina*, *Mimella* zone

3'

massive cobbly ls.

12'

cobbly ls + green shale. Many  
*Lingulella* small (*Valcouria*) zone

25'

massive ss + cobbly ls.

20'

greenish shale, with } suggests  
*Macrocoelia*, *Mimella*, *Opikina* } *Sowerbyella*  
zone

75'

thin bedded ss. + ls.  
with green shale

105'

green sh with thin ls + ss bands

15'

thin bedded ls + green sh  
small *Mimella*, *Opikina*  
Massive thick ss  
Bromide (base)



On highway between Falls Creek  
and Hy 77 at hairpin loop Bridge  
well exposed. Base with small  
Valones occurs above a thin sand  
in field at middle of hairpin  
bend just southeast of observation  
point. Followed by green shale &  
thin ls. Massive white ls beds  
occur at N end of hairpin bend  
about 0.5 mile below observation  
point. At base are Murina (large),  
and large Sowerbyites. Higher  
come shales with Sowerbyella  
followed by more massive ls  
with Camarella 50' below top  
uppermost beds contain  
Ancestrorhyncha and are  
much like Calcutty. The  
sequence is suggestive of Hy 99.



66 pieces  
Whitish ls.

07741814

200 paces to pinella  
in iron-stained beds.

(20)

August 11

Breakfast

~~1.00~~

Lunch

~~1.06~~

Supper

~~1.70~~

Gas 12.8 gals, Sulphur, Okla.

~~3.72~~

August 12

Breakfast

1.25

Lunch

1.22

Supper

3.60

6.07

August 13

Breakfast

~~1.25~~

Village of Benrya, Okla. now  
called Gene Aentay.

Lunch

~~2.00~~

Supper

~~2.20~~

August 14

Send Bill Horn a copy of the  
Cloud paper on Canadian brachiopods

28194 mileage in  
Norman

meals

Fodging

Davis, Okla

~~3.75~~

Panels Valley, Okla

~~1.20~~

~~5.10~~



$$\begin{array}{r} 87 \\ 77 \\ \hline 154 \end{array}$$

$$\begin{array}{r} 184 \\ 379 \\ \hline 563 \end{array}$$



(21)

August 11 visited the Brownide type section just NW of Brownide. The section had no bottom but I found a block with *Valcourea* in the float which shows the small *Valcourea* zone to be present. Above a thin ss. comes shaly beds crowded with cystids and *Mimella*. Art. Jr. thinks this is the same bed as the thick mass of *Bygon* on Hy 99. Above this came breccias generally moderately bedded and iron stained. The upper Brownide consists of some 60-80' of light gray moderately bedded limestone containing *Ancistrobrycha* at the top. The sequence is thus like that at Falls Creek & Hy 99. The Viola overlying the Brownide is granular, yellow-gray ls. abounding in *elastellus*.



1949 notes.

(72)

1. NE $\frac{1}{4}$ , NE $\frac{1}{4}$ , Sec 9, T2S, R1E, Murray Co., Okla.  
Middle Kindblade
2. Center Sec 5, T2S R1E, Murray Co.,  
Okla. (1 mi SE of Windmill)  
Upper Cool Creek
3. Center NE $\frac{1}{4}$ , Sec 6, T2S R1E, Murray Co.,  
Okla. (approx 300' below top)  
Upper Cool Creek
4. SE $\frac{1}{4}$ , SW $\frac{1}{4}$ , NE $\frac{1}{4}$ , Sec 16, T1S, R1W,  
Murray Co., Okla. (90' above base)  
Lower Signal Mtn.
5. Cen. S $\frac{1}{2}$ , Sec 29, T1S, R1E, Murray Co.,  
Okla.  
Upper Signal Mtn.

11.25) 10 (8

$$\begin{array}{r}
 28194 \\
 20740 \\
 \hline
 7454 \\
 .8 \\
 \hline
 5963.2
 \end{array}$$



(23)

Aug 15

Breakfast  
Supper1.64  
2.80~~Shipped from Norman 563 Bk.~~  
~~Bill Taper (fraction)~~

0.10

To Al Loeblich 40.00

Purchase of liability insurance  
for Bill Allen

16.85

To Dr. Frank Jappan

452 College St., Norman, Okla.

Windshield wipe

(0.25)

Aug 16

Breakfast  
Lunch  
Supper

1.10

1.58

1.85

4.53

In section NW of prairie there  
is no bottom but small Volcanic  
was seen. Top has ancient rock  
The section is like Hy 97.

Aug 17

Breakfast  
Taxi to home  
Porter tip

1.25

0.40

0.25

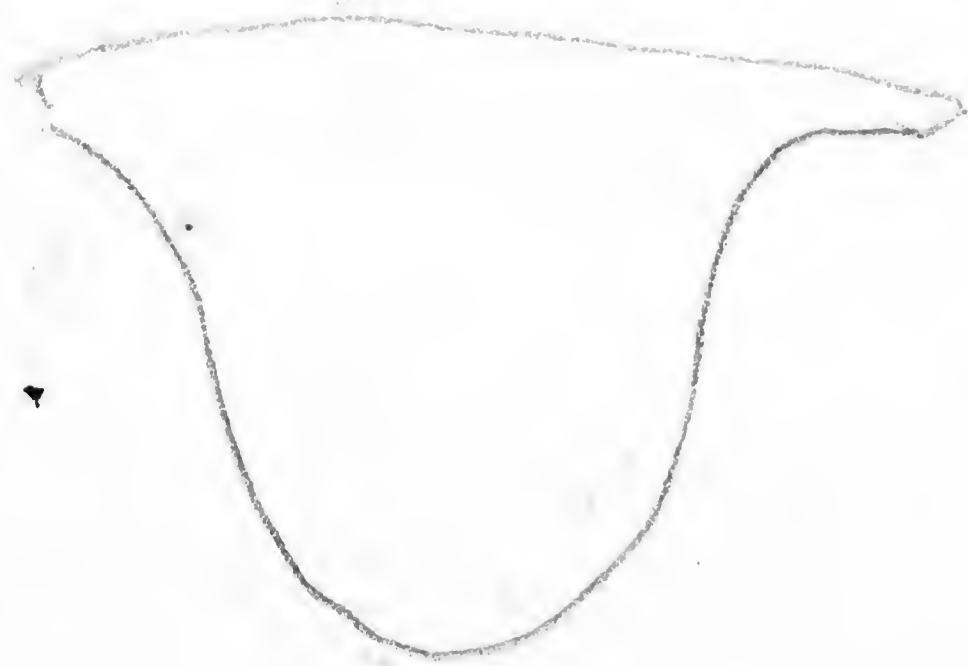


Trip to Pennsylvania and  
New York Oct. 1, 1949 - Oct. 15, 1949



Nagimay  
Malmont 135

Stover - 37  
Snyder - 66





①

Trip to Pennsylvania  
Oct. 1-15, 1949

Section in "Stones River" ls. on NE side  
of Middle Spring Creek, Middle Spring, Pa.

292'  
horizon

Dark finely granular ls. cherty near  
base, lithologically suggestive of  
Chazy of Mosheim section. Top of  
this interval is at sharp bend of stream  
at Middle Spring

N43°E 54°S

260'  
horizon

Massive blocky fracturing light gray ls.  
weathering ash white. Suggest Mosheim  
type

230'  
horiz.

Dark fine grained to finely granular  
ls.

Hesperotia?, Opikina in base?

8' horizon

cherty dolomitic, dark gray ls N35°E 66°S

83'  
horizontal

Dark gray to nearly black brittle, irregular fracturing ls

200'  
horizontal

Massive ls. forming small shallow quarry. 50'  
very fine-grained Mosheim-like  
of massive beds full of fossils. All rock mealy  
dark gray but much lighter than below

120' horizon

Dark gray to black mealy fracturing and thin-  
bedded ls. weathering ash gray. Mostly somewhat  
platy

dol.



②

Gas, Washington D.C. 12 gals.

3.30

Lunch

1.00

Gas, Everett Pa, 10 gals

2.85

Supper

1.25

Oct. 1. Left Washington 7:15 A.M. and went directly to Shippensburg to visit section at Middle Spring. Good section of "Stone River" on Middle Creek but failed to find and exposures continuous enough to build a section either on Pa Rte 696 or in the field, to the south. Sporadic exposures occur along a dirt road due south of Middle Spring. Onondaga appears by the roadside (Rte 696) at the north end of Middle Spring.

We also visited Kay's locality of Postler opposite the mill at Waterside. There dark massive bluish limestone with interrupted partings often deeply pitted. This is overlain by sparsely fossiliferous shaly ls. said to contain Ancistrorhynchia and Campylorthis. The conodonts sounds more like Wardell to me than like Beubach where Kay places it.

October 2

Breakfast

0.60

Supper

1.65

Groceries

0.68

2.93



③

Quarry of New Enterprise Stone and  
Lime Co. NW end.

Trunk black, blocky limestone

50'

Rodman. Rough weathering ls. ash gray on  
surface, dark gray inside. Granular bed 10-15'  
thick near base

135'

"Lowville" - various types dark, light-  
gray-weathering ls.

35'

Lemont = Hatter - silicious ls. with  
large *Campylodictya*

60'

Grazier - base not determined  
massive, mottled ls.

Collected Rodman on Penn. RR 1/2  
mile north of the station. Rodman  
65-70' thick with massive calcarenite  
at base. Pennsylvanian Leptaenoid occurs  
at the base. Camero-cladia markings  
abundant at base of section



④

Rodman ls on Pa. Hy 164 at  
east end of East Sharpsburg.

Covered

5'

8"

10'

3'

6'

23'

Black cobbly weathering, Trenton-like ls.

dark gray mealy, mottled weathering ls.

Dark gray platy granular ls., with  
up 4' weathering cobbly. Has peculiar  
filled Leptaena

Dark gray cobbly or platy ls. with many  
bryozoa, Zygospira. Has interbedded black  
cobbly ls.  
massive dark smooth to granular ls.

Coarse granular ls., a lime sand,  
bank. 10' above base occurs a 2'  
band of black ls. On top of the black  
ls in the coarse lime sand occurs  
the filled Leptaena

Covered



(5)

Oct. 3 Garminster - Dy on N side R., east  
side of Garminster N 58° E 47° N

Tunton More shaly & silty than in belts  
at Rearing Spring and Martinsburg

30-40'

Black shaly-weathering limestone  
grading upward into a silty calcareous  
shale rock.

225'

horizontal

200'±

Lowville Massive, weathers with skin  
mealy fracture

2-70'±

alternating limy siltstone and  
Hostler limestone. Siltstones much  
mud-cracked.

45'

Massive gray, ribbon-banded  
Grazier breaking dense, fine grained.  
Fossils abundant but poorly preserved. Large  
Opikina, Camptolothia. Atrypa "Crasped" form.

30'

Light, whitish gray, Tetradium-bearing  
Clover ls.

Laysburg - Banded, massive, earthy gray ls.



⑥ Oct 3 Union Furnace

West end of quarry on west side anticline.

At west end quarry Laysburg base not found but rock abounding to Clover appears near base and for 30-40'. Brazier is present in massive blocks separated by shale partings and abounding in massive Tetradium, large Opilina, Strophomena Minella and Glyptothrips. No Hostler seen at west end. Brazier often coarsely granular. Tetradium often makes lumps in shaly partings. The Tetradium beds are the Eye fm. of Kay.

Breakfast	0.60
Room 2 nights Holidaysburg	4.00
Lunch	0.50
Groceries	0.59
Car storage, Tyrone	0.75
Supper	1.10

On the east limb of the syncline the Hostler abounds in fossils. Opilina and true Strophomena are common. It strongly suggests the Ridley to me.

60
50
110
59
<hr/> 279



19  
95



Warner Co. Crushed Stone + Ballast  
Union Furnace Plant.  
Union Furnace

According to Kay  
In RR cut N 20° E 55° W

23'

Rodman

138'

Base with Columnaria, heavy-  
bedded, mottled. Lambeophyllum  
Nealmon + Prichon partings, not so close together  
as Stover. Not pitted like Stover

91'

Stover Heavy-bedded, dark, medium-fine  
texture, with undulating silty partings,  
speckled Stromatoverum + Syntactospongia (at top)  
ls. Canacocladia, Cryptophyllum.  
Riddled with holes

98'

Snyder Light colored detrital ls. with ls.  
Many ostracod pebble congl., white-weathering dense  
with Tetradium. Cryptophyllum rare  
Coral-like Tetradium but without Vagta

62'

Hostler Tan weathering silicious ls., many  
fossils. Strophomena. Surfaces often  
ripple-marked

33'

Grazier Dense, heavy-bedded, with wavy  
partings. Full of fossils -  
Glyptothiris, big Epikania, Strophomena, Mimella

61

Eyer ls. Calcarenite with massive Tetradium

68'

Clover

40'-80'

Loysburg alternating ls + dolomite with  
thin layers of ostracods.



②

Oct. 4

The beds above the *Nidulites* zone in the Strasburg region are lithologically suggestive of the Nealmont of Greencastle undefined.

At west end of Pa RR cut on N side of track 5 Stover surfaces show small *Opikina*, *Ceramus*, *Hesperorthus*, *Chocrinus*, *Reticellula*, *Camaroclada* a *Leptaenoid*.

On the north side of the RR cut continuous exposures of Clover-Stover are present. The Snyder brings in a white weathering interval with ls congl. in the upper 3/4. The Stover is suggestive of Guazier lithology but on a smaller scale. The rock is definitely pitted by irregular pits which may be weathered out *Camaroclada* or worm borings.

Breakfast  
Car Storage  
Gas, 10 gals. Tyrone  
Supper

0.60  
0.75  
3.00  
1.27



9

October 5.

Section 1 mile west of Tusseyville  
on U.S. 322.

## Measurements from Kay.

I would put the basal 8' of Rodman  
with the lower beds on lithology.

26'

Rodman - Basal 8' with thin black chert  
and light gray-weathering thin layers. Upper 18'  
dark gray, diab, not bluish, locally very dark  
gray ls. Surfaces peppered with animal debris  
A bentonite 15' below top not in Kay's section  
*Bilobia*, *Strophomena*,

44'

Centre Hall - Shaly weathering, blue-weathering  
dark gray limestone  
*Doleroides*, *Anictrorhynchus*, *Strophomena*, *Maclurella* C,  
*Hesperorthis*, some mottled worm tube layers.

8'

Bentonite

18'

Oak Hall - Dark gray, locally fracturing  
limestone with heavy, angular bedded  
blue gray weathered surface. Surfaces  
Benton rough. *Amurocladia* or worm-burrows not  
frequent, <sup>but present</sup> *Hesperorthis*. Snails common  
*Lowerbyella*, *Strophomena*, *Nidulites* (like  
in Lebanon). *Maclurella*.

39'

26'

Stover - Blue gray weathering, very dark gray  
limestone moderately heavy-bedded with  
some worm-bored layers like the main  
mass in the R.R. cut at Pemberton. Thin  
layers of calcarenite at top. *Cryptophragma*  
in lower part, large *Zygospira* and  
*Perticellula* at top. *Strophomena*



Quarry at Center Hall just NE of RR Sta.

N side quarry in Oak Hall ls. here angular blocks with yellow Camero-cladia surfaces containing small *Pterodroma*, *Dalmanites*, *Opikina*, *Strophomena* a, and *Hesperonthis*. *Maclurea*.

On S side quarry Center Hall makes up most of wall. Thin bedded, but often heavy-bedged shaly weathering limestone with yellow surfaces.

Breakfast

0.60

Lunch

0.32

Lodging 2 nights, Tyrone

5.00

Supper

1.75

2.07

Visited type Locality of Butts along The RR south of Tyrone from Milepost 58 to Road crossing. The section is Trenton-Rodman at the road-RR crossing and then Center Hall (Nealmont), possibly some Oak, but am not sure.

✓ Hall



(11)

October 6

160  
175  
335

Breakfast

0.80

Lunch

0.80

Supper

1.75

Preston 1 gal

3.50

Quarry on  $\frac{1}{2}$  mile N of Bellefonte  
in gaps and along Pa Hy 53.  
N50°E 60°W

Nealmont here must be rather thin.  
Unless the 15' massive beds are Oak Hall  
and the remainder Centre Hall - Rodman  
we were unable to make any divisions

Roadside

20-30'± Nealmont, lithology not like Rodman  
or Centre Hall

Top of quarry

20'±

Dark gray rough-weathering  
limestone breaking into lumps  
2-3" thick

15'

Massive ledges, very dark gray ls., hackly  
in fracture

40'±

Hard impure massive ls. some  
chert, brown weathering skin.

10'

8" metabentonite

cherty heavy bedded, dark gray (brownish)

metabentonite E 3-4" bentonite but  $\frac{1}{2}$ " zone of shaly ls.

60'

Stover - Heavy-bedded ls, dark gray fracture

Valley View → Nealmont



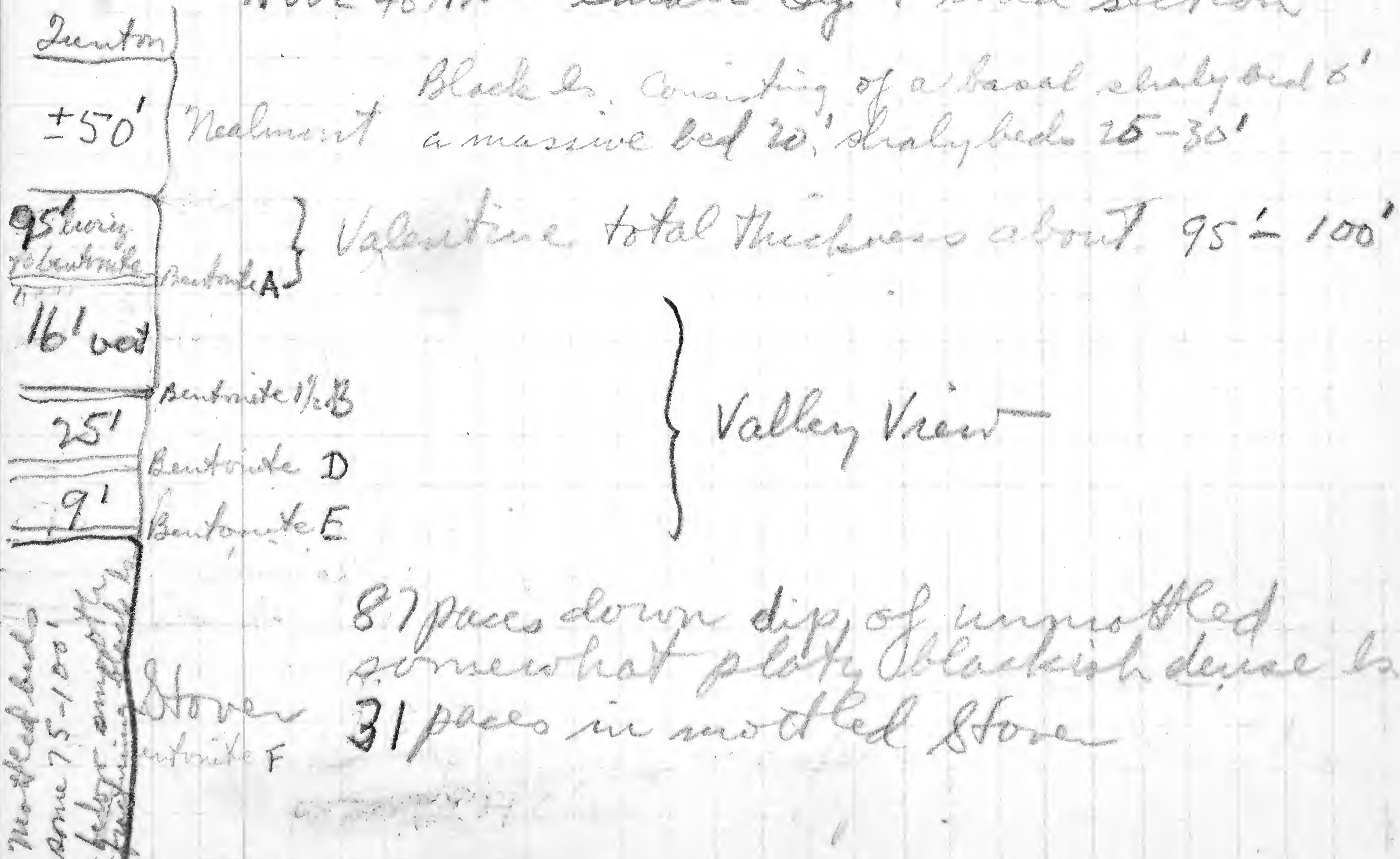
(12)

Starting from last short street in  
Belleville 78 paces down on 53  
are dark somewhat platy ls.  
trending  $N60^{\circ}E$   $S7^{\circ}W$ . They fracture  
black

33 paces farther north come  
black fracturing blocky fracture  
ls to the lowest Bentonite. These  
weathered surfaces of this rock have  
the peculiar irregular pits suggestive  
of the Stover.

Both divisions of rock here are  
much blacker than either Snyder  
or Stover at Pemberton. Are we  
dealing with facies of Hatter with  
the Valley View - Valentine being  
equal to Snyder + Stover?

$N60^{\circ}E$   $48^{\circ}NW$  - Small Oz + road section





(13)

95'

Bentonite A

Top of Valentine

Bentonite A-B = 16' 10"

B-C = 25'

C-D = 9'

Contains *Rostriacella*  
Contains *Rostriacella*

Visited quarry on NE side of Bellefonte. Here occurs a much thicker *Nealms* which seems to lie unconformably on Valentine. The westernmost end of the quarry has a considerable thickness of mottled rock suggestive of the Stover but much darker in color when fractured. All of the quarries seem around Bellefonte was unable to detect any *Snyder*, evidently Stover rests on the dolomite. We saw no *Clower* but *Bellefonte* at all.



(14)

Oct. 7 - Antes Gap. Locality on road about  $\frac{1}{4}$  mile E of junction of Pa 44 and road to Circle. On N side of road about 15' of coarse calcarenite breaking platy is assigned to Rodman. Shaler material above is placed in Salona. Kay took *Perrinites* here. We also took one in quarry at road junction from thin beds Kay himself calls Salona. On S side of cut is a steep bluff having calcarenite. 15' below edge of bluff where rock is cut away to form a drainage ditch for the road, we took the filled *Leptaena*.

Salona

20'

{ 8 1/2' to road.  
Calcarenite

16 1/2'

Filled *Leptaena*  
Calcarenite

3'

mealy zone  
Filled *Leptaena*

88'

Hackly fracturing dark, blue black ls

Stream at base of bluff



(15)

About 50 yards downhill toward Onole intersection Saloma with one (or 2) bentonites is exposed and just on the nose of the hill is a small quarry showing Saloma over massive Rodman. The latter here is a mass of detrital material with many bryozoa. Some 30' below Saloma in calcarenite occurs fossilized Leptaena. We think the Rodman Saloma contact is probably only about 5' above base of Quarry in which case the Cambonites is from the Saloma. Actually the shaly weathering rock on west side passes into the smoothly jointed Rodman hump. The Saloma-Rodman contact I would say is about 5' above floor.

Breakfast	0.85
Lunch	0.69
Supper	1.70
Hotel Bellefonte 2 nights	6.00
Gas Jersey Shore 10 gals.	2.90

85  
69  
170  
324



(16)

October 8

Section at Salona according to Kay

Nealmont 90'  
 Valentine 10'  
 Valley View 65'  
 Stover 90'  
 Snyder 70'

Salona any - Southwest side of quarry evidently in Snyder but the rock is highly solution for weathering and with a rough gritty surface. It has none of the lithology of the Snyder. It also fragments very dark. It suggests Boston lithology.

These are overlain by dark massive rocks presumably Stover of Kay. On west side of quarry are light gray weathering bedded ls with wavy bedding and some shaly partings. This would be in position of Valley View.

At the extreme west end of the quarry is a calcarenite (Moshain-like) band, probably the Valentine.

Above this is the Nealmont forming most of the NW wall. The mottled and banded Nealmont occurs in the lower part but the upper 30' are a coarse calcarenite in thick beds except for some shaly layers. At the west end of the quarry by the RR tracks the calcarenite of Rodman is contact with the Salona at about the edge of the wall. 15' below the Salona in a shaly bed occurs the fossil Leptaena.



0794

(17)

October 8

Breakfast

0.85

Supper

1.10

Lunch

0.10

October 9

Breakfast

~~0.55~~

Lunch

~~0.50~~

Supper

~~2.00~~

Bald Endicott

~~3.47~~

Hotel, Lock Haven, 2 nights

~~7.00~~

Oct. 10

Breakfast

0.65

Lunch

0.58

Hotel, Hamilton, N.Y.

~~3.25~~

Gas, 10 gals. Lowville

~~2.94~~

Supper

1.35



(18)

October 10 Roaring Brook Young <sup>see</sup> 44

Panelsia-Pre E contact just on upstream side of RR at Roaring Brook.

Panelsia-Lowville Contact at base of 2nd falls.

Top of Lowville just below top of 2nd falls.

Top Charnont at top of 3rd low falls.

Charnont blackish, cobbly weathering ls. suggestive of Graciosa. Fossiliferous marking of lower bed suggest Graciosa. Top Charnont also cherty and with Stromatopora, Tentaculophylloids and Columnaria. Charnont fracture shows almost black rock.

For Black River detailed section see Young Sec. 44.



(19)

October 11 -  
 Breakfast  
 Car service  
 Supper

0.70  
 1.45  
 1.60

Visited House Creek to collect  
 Rockland. Saw Rockland, Hyll and  
 Sherman Fall. Then went to  
 Roaring brook to see Sherman Fall.  
 The Cryptolithus bed is at the brink of  
 the second falls in the Park.

Went to see Coburn in the village  
 of Martinsburg.

In Lowville where Hy 12+12D cross  
 Mill Creek, just under bridge on  
 downstream side is contact of 13+  
 of Chamont with 13' of Selby. This  
 is a hard platy limestone in layers  
 about 8" thick. This distinguishes  
 the members from the massive  
 Chamont. The Selby is cherty but  
 not so much so as the Chamont.  
 The Nappange is thin-bedded and  
 shaly limestone abounding in  
 Dalmanella, massive bryozoa  
 and Eozygia with occasional  
 Zephrosia extans and Eowyerella.  
 The beds are exposed between the  
 two bridges behind the houses.



0797

N. State + River St.

(20)

October 12 -

Breakfast

0.40

Lunch

0.60

Supper

1.40

Gas, 11.9 gals, Binghamton, N.Y.

3.39

Hotel, Townville 2 nights

4.00

Collected at gorge of Sugar River where it flows under N.Y. Hy. 12. Lower part of gorge in Napanee member of The Rockland. Higher Napanee and Hull appear in a road cut just south of the river. Made Sunbury at 5:20 P.M.

October 13.

Breakfast

0.75

Room Sunbury

3.00

Lunch

0.46

Supper

1.90

Gas Lewis town

3.50

Bethlehem Steel Co., Cy. - Naguay No 1.  
Quarry at Naguay Tunneling N-S.

On west side of quarry is a rim formed mostly of dark gray ls. weathering ash gray to white with ls. breccia common. (Howard N and Stover lithology appears followed by beds of light gray fracturing limestone filled with ls. breccia. On the north rim on the west side Stover pitted lithology appears and the rock fractures fine granular and lighter in color than the lower Snyder-like beds. The Stover lithology is followed by

Napanee just west of bridge at junction of North State and River Streets.

Hammo-beathica in block of Snyder-like rock. Lower bed very white weathering.



(21)

fine granular limestone with prominent *Stromatocerium*. On this appears a 5' band of mealy weathering shaly ls. containing *Zygospira*, *Petrodema*, *c.*, *Strophomena*. The 3-5' above the mealy band has *Lambeophyllum* *c.*

The rocks from the mealy band up are darker in fracture & are mottled and often irregularly pitted thus suggesting Nealmont. The Nealmont is very massive grayish black limestone with some conchoidal debris.

About 5-10' of *Salonia* overlies the Nealmont. It is cobbly, black to weathering yellowish gray. It strongly suggests Edinburg (Happs Hill) lithology.

Q<sub>1</sub> 1/4 mi. SE of Nagney No. 1.

(2)

South face shows 15' of massive conchoidally fracturing silicious ls. that reminds me of Hatter. This is followed by 15' of white weathering pure ls. containing ls. breccia.

To the east along the quarry face the beds steepen to the east wall where they are very steep. The east wall is composed of steeply dipping massive ls. with worm-eaten surface like Stover. We estimate about 35'. The NE face of the quarry butts the east face in a fault. The NE face is mottled Nealmont with *Doleroides* in a shaly zone.



(22)

(4) Quarry 4 just SE of Honey Creek on NW wall has dark gray ash-weathering limestone in heavy ledges and separated by beds of thin platy blue shale about 3 or 4 shale beds in all. This limestone + shale occupies about the lowest 50' of the quarry are in these beds.

The next 65' of rock are difficult of definition but in it are black fracturing light gray weathering with wavy streaks. The lithology is very suggestive of Nealmont. The ledges are quite thick when fresh. I see nothing absolutely typical of Nealmont.

(of the 65')

The upper bed is a 3-4' band of conchoidally fracturing siliceous ls reminiscent of Horner

Above the 65' comes about 20' with Stover-like lithology, irregular short horizontal pits. I cannot be sure if this is Stover or Nealmont because they look similar. On this Stover-like material comes 2-3' of mealy ls with *Glyptotheca* and *Pionodema*, the same as the mealy band in Hagin No. 1. Above the mealy bed are 125' of Nealmont-like rock.

Fine-ribbed *Ancistronychia* was seen in the rock of the 65' interval.

The shaly beds are interbedded with dense ribbon-banded limestone weathering brownish gray and having a conchoidal fracture. Near the entrance to the quarry where the section begins the rock seems dolomitic. This division suggests the Logansburg but it may as well be Canadian.



23

October 14

Breakfast

0.60

Hotel, Lewistown &amp; garage

3.75

Lunch

0.50

Supper

1.70

Query 1.8 mi S54°E of Orbisonia  
Craig section 2. MB = metabentonite

11' A

A - very dark Trenton-like fracturing ls., crinkly-bedded weathering blue gray. The 1 1/2' below the bentonite has the same blue gray weathering. The top 30' contain *Opitima*, *Dalmanites*, *Hesperorthis*, *Strophomena*

10' B

MB

15' C

B - ca 10' heavy-bedded dull gray weathering crinkly mottled ls like characteristic Nealmont. A+B = Rodman - Centre Hall.

11-15' D

10' E

C = same as B

40' F

D. shaly-weathering with two mealy bands seems more shaly than AB which is unlike Oak Hall at type section. Fossils abundant but poor. Small *Sowerbyella* c, *Hesperorthis* c, *Opitima*, *Nidulites*-like fossils.

33' G

E+F = Snyder

E about 10' of mottled crinkly bedded ls blue gray weathering which I would call Nealmont.

14' H

G - Hostler - Mostly black fracturing ls, very fine grained, heavy-bedded with uneven surface between bands. Upper 6-7' drab-brownish gray weathering cross-sections suggesting *Ancistrosynchus*, *Girvanella*, *Stromatocerium*? *Girvanella* bed separated by thin shale with *Campylothis*?

14' I

40+ J



(24)

H - 14' of Brazier, heavy-ledged streaky mottled surface weathering into rough yellow & blue gray plates!

I - Clover mottle & worm-bored, nearly black fracturing limestone, many sections of snails.

J. 40' + heavy-ledged, yellow gray weathering; finely banded limestone with conchoidal fracture. Contains a thick 1' bed of shale and a dove (caliche) band! This division is like that at base of Ay 4 at Naginey. It is quite definitely The Logsbury!

Quarry 0.8 mi S 5° E of Spring Run

Oranda { Like the Mercersburg in lithology

Mercersburg { Wavy bedded, blackish ls. breaking into ragged lumps, the shaly surfaces weathering yellow. *Opikina*, *Hesperorthis*.

20' Dogfishburg - calcinute

28' Fairettsburg { Black, mottled, weathering dull dark gray with yellow surfaces. *Solenopora* and *Stromatoceras*

20' Pineburg { Black, hard massive, wavy mottled Brazier lithology

Any of the beds described could produce Edinburg - Chambersburg lithology.



(25) October 15 - Visited section 2 1/2 miles SW of Majors. I was impressed by the Nealmontian character of all the beds above the cobbly layer. In the section at Wilson, Md. The Stover-like lithology of the top 50' of the Pinesburg is very striking.

Breakfast	0.80
Lunch	0.50
Gas, Hagerstown, 10 gals.	2.86
Hotel, Chambersburg, Pa	2.00



April 19, 1951

Ap 19<sup>1</sup> 5.1 mi southwest Kimmel Sprs.  
in hand lining ss. D. most like like  
D. transiana of Billard

Ap. 19<sup>2</sup> - Bosses of cobbly ls. having  
Up. Lenoir lithology. Contains sponges  
suggesting Lenoir or Beutolt  
Ss #4 near base on road 0.75  
miles SW of Low Chapel, Blockhouse  
□, Tenn.

Ap 19<sup>3</sup>

B M LHT 1366

Intersection at B M 1366 - 4th  
Sevier shales. Rd intersection  
Blockhouse □, Tenn. Soft pinky  
shale with Cyrtomatella, Paraceraspis  
richardsi, suggests Migen or possibly  
lower. Road at Chilhowee View  
school turned SW to pass Moshannon  
& Lenoir on south side road. Knox  
on N side for about 1/2 mile SW of  
shad.

Ap 19<sup>4</sup> Blockhouse - 20' of  
cobbly & shaly ls. about 200 yds  
long, parallel to road. Overlain  
by black shale. Contains  
Leptellina & Migen. like Sowerbyites

Neuman's ss #4 in Keith's  
ss lentil in Sevier

Ap 19<sup>5</sup> Shale #6. Bend of road  
0.55 mi about 1/2 mile WNW of Butterfly  
Gap, on Mook Creek. Blockhouse □  
with abundant Sowerbyites

Send Bob Raymond + Willard  
Cambrian papers for Bob + Phil.



Apr. 19<sup>6</sup> Mook Creek, lower Bays  
with coarse ss and about 2 mm  
west of house just NW of C in Mook Crk

Apr. 19<sup>7</sup> - 150' under Bays, 1.1 mi  
SW of Saw Chapel. ss with  
Dolomites.

Apr. 19<sup>8</sup> - SS#4 with cobbly ls. &  
marble like Apr. 19<sup>2</sup>.

Apr. 19<sup>9</sup> Spicewood Branch,  
SS#3, 1.45 miles WSW of Rocky  
Branch, Pearly ss. with *Strophomena*  
of *Tennesseensis* type.



75  
742.1

---

3.1



April 20-21

Halls x-roads - turn right at light on turn 131. Turn right on Browns Gap road. 'Benton' at junction with Browns Gap road & main road. Witten in field on south side of road. On Bell road Bentonite near top of Morrison Reservoir about 50-100' above the Bentonite. Lowest of 3 big bentonites.

Bob reports lower bentonite at S curve just past Kays Chapel. On end of S side of S.

Bentall fossils with abundant Fasciolaria 200' S of Racoon Valley road on US 25W

Just below beds with Tetradium on North crest of hill just N of Elgin Gate of Oak Ridge project Clinton Co. Probably Pelee. The Tetradium beds are the Bentall

Wardell Proterozoic. NE of gate just above Glyptotheca. Hedgcockia 1/4 mi. NE of gate. Like Rye Cove Wardell with Glyptotheca. Raccoon Valley rd. at a road junction just over Clinch R and L & N railroad about 1/8 mile. Clinton Co. about, 3.1 miles west of 25W



8.3



April 22

Newman 43A

Apr. 22 Kusick Spr. □, old Tenn  
73, NW side Little River, 0.3 mile  
ESE of Walker Chapel, in ravine  
about 100 yds S of road. Lowerbyites  
in ss (either #5 or preferably  
unidentified horizon SE of Gress  
Creek. On road about 50 yds east  
of creek, in shaly rock are large  
Dinorthis.

Apr. 22' - Road cut with purple  
ss. having large coarse ribbed  
Dinorthis, Rhynchonella and  
Mimella. This is ss #3 or shale  
#4.

Type Tullis = ss 1 through ss 3.

Bimuria locality had also Cystostella  
1.3 miles ENF of Kusick. Bimuria  
are in shale #4.

Lowerbyites bed on Chapman  
highway are also shale #4.



9.6  
8.25



Apr. 23

Lenoir  
 Small qtz. on ridge road  
 1.5 miles S ~~mile~~ of junction  
 of US 411 & Tenn 71. Ridge road  
 goes S from junction. Clin  
 Riverville

Loc 1.58 miles ENE of Kussick  
 Heavy-bedded cleared qtz with  
 lower brachiopods, *Dalmanites* or large  
 orthid, *Leptellina*, *Oxoplesia*,  
*Multicostella*, *Lingula*, *Echinozaphrentis*,  
*Rhipidomena*

Bonds Creek School - a layer of  
 shaly ls. between Lenoir with  
*Valcouria* & *M. Nucula* and  
 the Effusa beds with *Artinorachis*.  
 This could be the *Lencosuchian*  
 horizon.



Tennessee - Alabama

October 14 - 26.

1951



$$\begin{array}{r}
 30 \overline{) 460} \\
 \underline{30} \phantom{0} \\
 16 \phantom{0} \\
 \underline{14} \phantom{0} \\
 2 \phantom{0}
 \end{array}$$

$$\begin{array}{r}
 70 \overline{) 982} \\
 \underline{70} \phantom{0} \\
 282
 \end{array}$$

$$\begin{array}{r}
 282 \\
 \underline{280} \\
 2
 \end{array}$$

$$\begin{array}{r}
 275 \\
 \underline{19} \\
 85 \\
 76 \\
 90
 \end{array}
 \quad (14585)$$



①

Oct. 15

Bethel Valley Sheet,  
Section at B M 15 712

Yellow cherts with piconodemois on NE side of section, contains interbedded green shale, this chert ca. 200' thick. It suggests Ward Cove because of *Trisifera*.

Under the W.C. chert occur 125' gray or greenish shale, very thin-bedded. Toward the bottom the shales are bluish. Under these shales are red-beds of Hogskin. Red beds = 125' Under the reds are 75' of Elway Chert. Under the Elway 600-50' of yellow shale & red-bedded Knox contact comes just south of sharp bend of road about 1/4 mile N of intersection.

On south side road about 25' nodular brown fossiliferous ls. Then comes cobbly ls with large *Murchella*, *Opikina*.

Moccasin at top of section about 0.25 mile south of intersection at end of hairpin.

About 0.1 mile to base of Moccasin from intersection. The *Dunorthis transversa* bed is under the road. Little or no Wardell, probably replaced by Moccasin.



②

Oct. 15  $\frac{1}{4}$  mi N of Eliza Church - about  
125' of whitish ls & dolomite below  
Elwray. 15' of red beds at base of  
whitish beds.

Bethel Valley  $\square$  about  $1\frac{1}{2}$  mi E of  
East Fork Valley, road just N 2<sup>nd</sup> of  
of XL Springs. Road through Gum  
Hollow Branch. XL Spring comes  
out of The Knop. On NW side  
of Turnpike Knox chert on  
top hill. Blackford sh. & chert  
on slope. Contact about 100 yds  
N of road. Ridge on south side  
road is Elwray. Blackford mostly  
dark gray clay. Bower about  
0.2 mile S of intersection.  
Cryptophagnus about  $\frac{1}{4}$  mi S of  
intersection. Another Cryptophagnus  
seen about 0.3 mi S of intersection.  
First reds about 0.45 mi S of  
intersection. These are Miller's  
Ben Hur according to BNC.  
About 0.5 mi S of the intersection  
comes residual soil with large  
Zygospira showing we are well  
up in Fenton. This is at turn-  
off to country Club (Oak Ridge)

Dip  $30^\circ$  Strike ca N 50 E  
Wardell-Bentolt seems to be  
faulted out of this section.



(3)

0.4 mile S of intersection just  
W. of Elga Cove. This is  
Hardy Creek of Miller which is  
the fossil bed at top of Hagan.  
Here we saw *Ancistrorhynchus*,

The *Rhynchotrema* here suggests  
Hermitage or higher.

The Hardy Creek locality is opposite  
a side road from the west.

Ben Hur mud rock is opposite side  
road. This contains large coarse-  
ribbed *Zygospira*.



④

October 16 - Big Ridge Park □  
 Section starts on N side of inlet  
 about 1 1/2" south of NW corner of □.  
 On north side inlet excellent  
 exposures of Knox this is  
 overlain by red beds & dolomite  
 of Blackford faces at water's edge  
 on N side of inlet.  
 N 28° E 15° SE

- ① Blackford, red beds, dolomite  
 massive, cgl. with red chert  
 and ragged blocks at base.
- ② Lowville-type rock in beds up  
 to 15" thick. Tetradium syringopora  
 abundant, Sirvanella, some silty  
 yellow layers, red mottled layer  
 below middle, smooth ostracods.  
 This interval culminates in a red-bed
- ③ Massive ls full of Tetradium  
 and Anisostrophia
- ④ Covered
- ⑤ Massive mealy fracturing ls.  
 making a ledge 120' thick
- ⑥ Ls with black chert, thinner  
 bedded than below. Black in  
 fracture. Some silicified snails  
 Helicotoma X section



- ⑤ ⑦ Massive, dove bed about 15' thick
- ⑧ Cherty (black, blocky) but limestone rather light gray. Thin bedded. *Tetradium* abundant. Brownish gray color. This is Miller's *Pterids*. No chert except at bottom. Top of interval has another *Anisotrichyncha*. *Tetradium* abundant in thin wealy beds, suggests Hagan cut.
- ⑨ *Tetradium* beds. probably *T. cellulatum*.
- ⑩ Cherty gray ls. A few feet only. Big *Leperditia*, *Anisotrichyncha*
- ⑪ Thick dove bed.
- ⑫ Dove & wealy *Tetradium* ls
- ⑬ Reddish silty bed a few feet thick.
- ⑭ Thin-bedded ls to *Hesperothiris* & *Stromatoceras*.

Cryptophagus - east side of  
Jacksboro Nat US. 25W. 1 1/4 mi  
NE of Jacksboro



⑥

Loose below Stromatocerium we found a loose piece with Cryptophragmus. This was in a position I feel confident was not far from in place.

In the Witten the Cryptophragmus spanned fully 200 feet of rock. The full thickness of the Witten is some over 200' and the Cryptophragmus occupies nearly the full thickness.

NE of Jackson the dip was about vertical. Started in cherty Perry and went through same sequence as we saw at Andersonville.

The Tetradium beds between the red beds are most like New Market and are probably the equivalent of the Elway and Lincolnshire (Hogskin).



⑦

October 17-

Left Knoxville and went over to Reckwood. Took US 27 down valley searching for a limestone belt. Went to about 5 miles SW of Dayton but saw no good exposures.

Went over to Sequatchie Valley and worked from Cold Spring south to SW edge of Pikeville Quad. No long sections seen anywhere in Valley. Saw two short sections of Witten with Cryptolagus common, one on W side Valley  $2\frac{1}{2}$  miles SW of Pikeville and the other on the east side  $2\frac{3}{4}$  miles almost due south of Pikeville.



⑧

Oct. 18.

Base of Cedar Ridge, SE of Litton  
Sagittale Valley.

A - ca 8' white crusted dove ls with  
streak of *Tetradium*, *Bathyrinus*  
and coarse ribbed *Anostrothya*  
Looks identical to Perry just above  
red-bed in Andersonville section.  
Thick black chert. Exposed on  
both sides intersection.

P

Bentonite

N

B. massive somewhat impure ls.  
very dark gray with big *Lepeditia*

16'

M

C. shaly ls. 2'

16'

L

D dark gray earthy weathering  
massive 12'-3' in 2 layers.

85'

K

E 5-6' shaly mud-cracked ls.

F 3' hard, dark brown-gray ls. with  
*Dystactospongia*, *T. syringoporeoides* &  
*Anostrothya*.

50'

J

4'

I

4'

H

G. Thin-bedded, dark brown gray ls.

12'

G

3'

F

5-6'

E

2-3'

D

2'

C

6'

B

8'

A

Covered

Smooth fracture. Small coarse  
ribbed strophomenoids. Some  
partings show *Camaroclada*  
yellow markings. *Glyptorthis*  
suggesting *G. apiculus*



⑨

H - Same as below but with  
Hesperotthis, Opikina, Anisotrypa  
opposite lower

I. Camerocladia beds 4'

J. 2-3' heavy ledge with  
Opikina 6', Anisotrypa  
Camerella. Small amount of  
chert

K - about 60' of thin bedded Camerocladia  
parting ls. with.

Lebanon L - { 35' dolomitic limestone lying in part  
Carters { 3' massive ls. with *Tetradium*  
15' dove gray slabby calcareous

M - Calcareous 16'

N - Cherty ls. with many fossils  
mostly covered. *T. cellulosum*  
near top = Carters?

O. Bentonite

P Slabby mud-cracked bluish  
earthy ls.



(10)

October 18.

Section on base of Cedar Ridge Pikeville □, section started at road intersection and headed toward Tow Gap. The lowest rock is like that of low Perry just above red beds in Andersonville section. *Ancistro-rhyncha* present in all lower rocks but hard to get. Fossils occurred again near top of massive ls. Here at same *Glyptothorax* like *G. assimilis*. Then a little higher came *Hesperorthus* + *Opikina* like the high Wardell. This is also like high Ridley.

Above the Wardell-Ridley came *Camarochadia* beds and about 60' above base *Pionodema* and other Lebanon fossils. A calcarenite occurs some distance above the *Camarochadia* beds + has *Sowerbyella*, *Doleroides* + *Campylorthis*. I think this is all high Lebanon. Above the granular beds the section is mostly covered but bluish ls. contain *T. cellulosum* and *Lichenaria*. This is undoubtedly the Carters. Then comes a Bentonite followed by earthy limy layers.



At junction Tennessee 8 + 28  
just SE of Dunlap are high  
beds of our section with Bentonites.  
Between bentonites are chalky -  
weathering limestones with  
fairly large cup corals. This  
reminds me of the large  
quarry in Chattanooga.



(11)

October 19 - Saw section on West Chickamunga Creek. As nearly as we could determine the base of the beds on the creek are just about the base of the Murfreesboro. I think that the creek may have cut down on the contact.

Taking the right fork of the road there is an exposure of Beulolt-like rock at the top of a low hill. This overlies a thick yellow shale and it underlies *Hesperorthis* beds we think are Wardell.

The quarry  $1\frac{1}{2}$  S of Cove Church seems to be in Wardell and lower Lebanon. The combination of species suggest Wardell rather than high Lebanon.

The *Hesperorthis* beds north of Rock Spring must be in the Wardell also. The Ridley group would include most of the shaly beds above the *Maclurea* ls.

The big cut on the north bank of Chickamunga Creek on US 27 is same Beulolt-like bed as that seen this morning.



October 20.

Left Tunnelle for Attalla. Saw section just SE about 200 yards from Big Wills Creek on U.S. 241. Lower beds are cherty with rounded small masses of chert.

According to B, N, C. This is like the Hardy Creek of Miller. These are A in the section. The ls. is dove, brownish gray

B - 29' to calcarenite with *Rostriacella*

C - Upper 6' shaly ls. with *Sowerbyella* and *O. pilina*

D - Dark shale with ls. cobbles.

E - 2nd *Sowerbyella* zone  
Shaly ls.

F. Calcarenite with *Stromatocrinus*

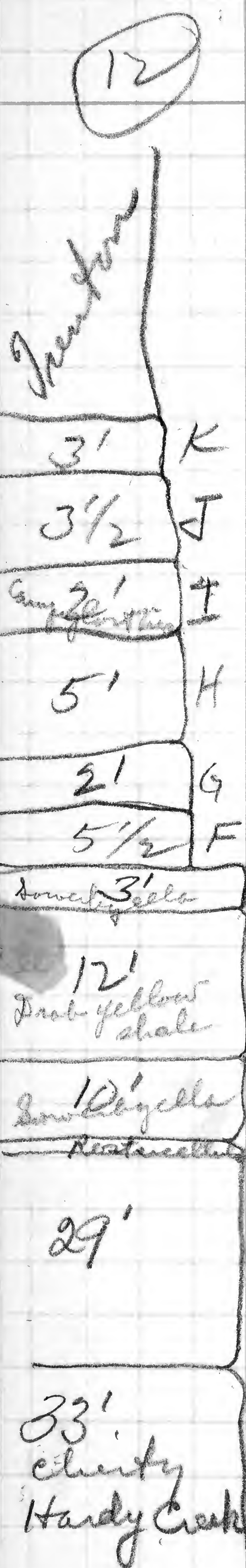
G. 2' with *Camarocladia*

H. Brachiopod breccia

I. Crumbly ls. with *Campylorthis*

J. Earthy clastics with *Dystactospongia*

K. Calcarenite with *Sowerbyella*





(13)

October 21. Left Dalton about 8:30 AM and went through gap just NE of city. Here saw red beds said to be Moccasin-Lenoirville. The beds however are very coarse and sandy and are rather massive. They were suggestive of Senatchie rather than Moccasin.

Followed Georgia 201 over to Villanow. East of Villanow about 2 miles saw some red beds but no good section.

Went west of Villanow on Georgia 143 marked (2) on Catlett sheet. About 2 miles W of Villanow saw long section in Silurian capped by Chattanooga shale. Still further west through Maddox Gap is another long section extending down to the junction of Ga (2) (143) and Georgia by. 95. At the junction occur red and yellowish mudrock, thought by PNC to be Blackford. For about 0.4 mile east in the field are in succession dove ls. followed by yellow shales with thin limy bands with *Sowerbyella* and *Piondema*. Above these are yellowish Moccasin mudrock, possibly 275' in all. Up the hill are Senatchie red beds.



Specimens in  
Ottawa Canada

September 22.

Spent entire day at Crown Point. On east shore Bulwagga Bay section is exposed at South end of the Bay. Lowest rock exposed is the upper part of the Fort Cassin limestone, A1 of Raymond's section A.

This is overlain by 14' of shale dark gray in color, and containing beds of hard limestone up to 6" in thickness. One of these 6' from the base contains Lugula branneri in abundance. A2 of Raymond

These shales are followed by about 40 feet of dark gray limestone. Fossils are common above the lower 5'.

Raymond's section B. is mostly from the new bridge west along the shore to a point just beyond the old French Fort. Here was taken Dupleixia gracilis.

The upper beds of the Chazy are in the fort grounds, a bed of 2' bed of coarse ss.



Borrow Obolus affinis from  
Redpath

Orthis band 3

Camarotoechia plena from  
Montreal.

Pionodonta subaequata Montreal

Cam. varians Montreal

Orthis platys "

Albany R. Dev.



Types from Coughnawaga, La. Prairie  
B., One. 2 views

*H. vulgaris* Raymond \*

*Amurella longirostris* 1039

Has dental plates + suggest 3  
small Implexia. Beak of ventral  
valve of type is broken. Strong  
dorsal fold at very front of valve  
Mingau Ids.

*Amurella varians*

Type lot of 2 specimens, 1038 is  
a wide one, 1038a is a narrow one.  
Wide one has flaring flanks +  
triangular sulcus, 4 on fold. Sinus  
originates at middle of valve  
Narrow one has 2 ribs in sinus  
with narrow folds bounding sinus  
Mingau Ids.

*Stroph. imbecilis*

Good ventral 5596

" dorsal 559

881 *Remopleurides affinis* Bill. with  
Leptella.

*H. intermedia* for Dr. Kindle



*Obolus belli* Bill.

Island of Montreal, Que.

1026 b is ventral, 1026 c is dorsal.

Large globose in shape, beak  
near a L? 2 views

*Lingula lyelli* 1027c

Alumette Id., Pontiac Co., Ottawa R.

Very elongate distorted & wrinkled

L. 55, W. 27; 1027 = L. 37, W. 23 2 views

*Dimorphis platys* Bill.

Id. of Montreal, Que.

1034 a = 44 W, 35 long

Simulate in front  $\frac{1}{3}$  of ventral  
valve; subcarinate umbos; dorsal  
sinus ~~to sides~~ in posterior  $\frac{2}{3}$

5 ribs at front in 5 red lines 3 views

*Hebertella imperator*

2 views

1036 - Ventral interior

1036a - Dorsal " & side view

Hawkesbury, Ont.

*C. plena* Bill

Montreal, Que. 1040

L. 37, W. 32

6 ribs in sinus, one on each slope  
of sinus; 5 on flanks, W. of sinus 76

Dorsal, 4 on flanks 6 on fold; a  
subdued rib on slopes from fold. Ribs

all strongly angulated 4 views



*Camerofoecia orientalis*

Mingau Islands

Small, 3 ribs in deep sinus, strong 4 ribs, 4 ribs on flanks. L. 16, W 16 figure 1041 **F**. 3 views

Several specimens with 4 ribs in sinus, + 5 on flanks. May be another species

1041 a, b, d, R, 1041

Specimens with 4 ribs are wider than those with 3 + have a more convex dorsal valve, select 1041 b for type L 16, W 19

Flanks of 4 ribs in sinus very flaring ~~sides~~ apical  $\angle$  obtuse, one with 3 ribs is acute. Beak of 3 ribs more acute. 4 views each.

*Hebertella borealis* 1035c

Type specimen, broken, dorsal side strongly convex, sinuate to margin, strong ribbed. 5 in 10 at front. Apical line, narrow delthyrium. Cardinal extremities deflected strongly dorsally. Dorsal lateral slopes very steep towards the cardinal extremities. Ventral valve flattened with very gentle lateral slopes. Type L 35, W 42! Ribs become very fine on flanks. 38 ribs on ventral side of type

A large specimen 1035a suggests *H. imperator*. It is L. 44, W 50



Red scale

*Clitambonites porcia*

1044

W. 18, L. 11.

Small, multicostellate, finely imbricate lateral margins gently rounded, card. Ls obtuse. clutera area orthocline, delthyrium very narrow. This is almost certainly a small glyptothus. It is associated on same slab with a small pterodroma-like brach + a big cystid.

Chazy, Island of Montreal.

10

2 pictures

*Strophomena canadensis* Wilson

W34, L. 27. Swollen in middle, 6220 rounded cardinal extremities, rounded anterior and lateral margins. Sinuate umbo and to middle of shell.

1st terrace above house on rd. 2 pict.  
MacLean Landing, 30 mi. above Ottawa.

*Orthis acuminata* Bdl

1045

Fragment of dorsal exterior with low cardinal process  
La Prairie, Que.

1 picture

*Lingula lunonensis* Bill. 1028

Near L'Orignal, Clarence Tp. lot 16, or 10.  
Con. 1? Russel Co., Ont.

Swollen in middle + with low elevation in middle. Ventral valve

1 picture



Pictures taken  
*Eichwaldia subtrigonalis* interior  
1145 d; type 1145a (small whole)

*Dinobolus magnificus* interior  
11616

*D. canadensis* type 1150.

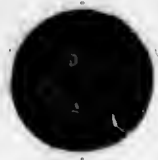
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McLearn Exchange

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*Camerella parva* Bill suggests  
*Cyclopsira* or *Triplexia*, ditto  
not a Camerella







## Types in M.C.Z

*Palaeoglossa belli* - MCZ 8722 - consists of 3 specimens; 1 ventral, 2 dorsals one of which is not recognizable. Ventral valve lacks apex of beak. Length 20.8 mm; width at widest part about in middle is 16 mm. Surface with concentric, ~~to~~ rounded lines separated by finer wavy lines.

Dorsal valve incomplete at beak, and shows scarcely any ornament. Casts taken. Row Republic Co. 3 mi. SE of Knoxville, Tenn. Holston, hard sparsely granular light gray marble. This is probably a new species.

*Palaeoglossa gibbosa* - 8587, Murat, Lexington, Va. Hard, light gray, semicrystalline to crystalline ls. Length 26.5 mm., width about  $\frac{2}{3}$  from beak 25 mm. Seems to be a dorsal valve. It has median septum. Consequently the species is probably an *Eichinoidia* as I thought.

*Schizambon euneatus* - 8588.

Length 15 mm., Width slightly anterior to middle 13 mm. Holston, ~~dark~~ light gray semigranular ls. Concentric lamellae with double line on edge. Spines very fine about 2.5 mm. Long



McNutt Qy, Sharon Springs.

*Conotreta declivis* - M.C. Z. 8593 <sup>McNutt</sup> dm  
pinkish granular marble containing  
*Ptychoglyptus*, *Cyrtototella* to called  
Holston, McNutt Quarry, Sharon Spr.  
Height of cone 2.5 mm, width at base 3 mm  
Ornament only slightly preserved  
consists of fine, even concentric  
lines.

*Acrosaccus shuleri* - 8591 McNutt Qy.  
2 specimens, 1 ventral, 1 dorsal in  
gray + pink granular marble  
called Holston. Dorsal valve small  
with submarginal but fairly strongly  
elevated apex.

Ventral valve conical with apex  
partially broken away showing  
a tiny hole for the pedicle which  
must have emerged at or slightly  
posterior to the apex.



*Acrosaccus punneus* - 8592  
granular to semi-granular pink  
and gray ls. Shell is large  
exfoliated from the inside

*Petrocrania prona* - 8589 = n. sp.

Base of O Horse, by N of Luttrell, Tenn

Length 15.5 mm; width at middle 14.5  
Thick shelled, stout forming a very  
low cone about 4 mm high. Apex  
not preserved, apparently located  
about  $\frac{2}{5}$  the length from the posterior  
margin. posterior <sup>or shorter</sup> slope gently convex  
with moderate slope, Anterior slope  
gentle and very gently convex.

Posterior scars very large, close  
together. Behind them two  
oblique ridges extend towards  
each other but do not unite  
Anterior scars smaller, not well  
defined, indistinct. Surface marked  
by horizontal growth lines only.



Apertypa

*Petrocrania acicula* - 8590  
Ottosee (base) Qys. N. of Luttrell, Tenn.  
Very convex, sulcate anteriorly.  
Median muscles (Posterior?) large.  
No muscles seen at anterior  
margin on opposite sides of  
ridge produced by the sulcus.

*Orthis disparilis* - 8594, Ottosee,  
Liberty Hill, Tenn. Same as my  
*H. australis*.

*Plectorthis holderi* - 8595 - a flat  
plate of dark gray chert weathered  
brownish on upper surface  
showing a number of small dimorbid  
Called *Holston* at Greens Ferry  
but seems probably more likely to  
be *Levin* as it is chert. Specimen  
a small ventral valve with 27 costae  
swollen umbonal region. Suggests  
the small Linking Creek specimens  
or some of the smaller silicified  
Dimorbidia from the Ottosee.



*Hebertella melonica* 8596  
O'Hosee (Lower 30'), Fugates Hill  
Large, subquadrate, Length 25.3 mm;  
width 30 mm. 9 ribs in 15 mm at very  
front. Ventral beak protrudes beyond  
dorsal. Ant. commissure faintly  
+ broadly implicate. No dorsal sulcus.  
Ventral sulcus shallow. This is of  
large size.

*Glyptorthis* - my *virginica* but small  
O'Hosee at Liberty Hill. Best specimen  
8.3 long, 10.5 wide, 5 mm. thick. Strongly  
opaxial in area, and very convex  
ventral valve. Dorsal valve only moderately  
convex.

*Dalmanella rogata* - O'Hosee at Liberty  
Hill. These are the *Pinnodonta* with  
dalmanelloid appearance. L = 17 mm,  
width 12.5, thickness 4.5 mm.  
Ventral beak extends above dorsal,  
beak very prominent. Dorsal valve  
only slightly convex. I have some  
from high Chazy. They look like a  
robust *D. rogata*.



*Placsiomya platys* - 8598 - Otter  
Species Ferry. Very large ventral  
length 26 mm., width 33 mm.  
Thickness 7 mm. Sides subparallel  
front broadly rounded. Cardinal  
extremities a right  $\angle$  but deflected  
dorsally with deep grooves. Beak  
prominent. Dorsal beak extending  
slightly posterior to ventral. Ventral  
valve very slightly concave at front  
half. Ribs varying from 9-12 in  
5 mm. at front on same specimen.  
In 5 mm at 18 mm anterior to beak  
are 12 costellae. This specimen is  
a large specimen of *P. brevis*.  
Same is probably true of the interior.  
These may differ from the large  
coarse-ribbed ones from Rye Cove, Ct  
described.

*Placsiomya brevis* - 2 specimens  
Cotypes 8600 - Larger 17.5 long, 24 wide  
Cardinal extremities deflected. Ventral  
valve slightly concave in front  
Sulcus shallow extending from  
beak to front margin. 13 costellae  
in 5 mm at antero-lateral  
margin of dorsal valve. Swollen  
ribs not numerous. Otter Fugates  
Hill.



*Placsiomys elongata* - length 20 mm.  
width 12.5, thickness 11 mm.  
Hinge 20.5 mm. 11-13 costellae in  
5 mm. at front. Squarish, very  
thick, ventral sinuate, flatly  
convex on flanks. Dorsal rather  
strongly convex. Lateral area long  
apiculate (strongly) Dorsal interarea  
curved apiculate.

*Dinorthis atavoides* 8605 - Holston  
N of Copper Creek on RR between  
Speers, Tenn & Clinchport. The  
specimen is large with no  
intercalated or bifurcated costae.  
The median portion of the ventral  
valve is swollen, the front depressed.  
The postero-lateral regions are depressed.  
The specimen looks like the large  
*Dinorthis* called Lenoir by Butts.  
Ventral muscles large. Matrix  
of interior is dark gray nodular  
evidently from shale.



*Daiorthis quadriplicata* 8602

O'Hare, Fugates Hill

Length 19 mm. Width 24.2, hinge 17 mm

Subquadrate, rounded extremities  
4 or more stronger divided or  
undivided ribs in central part  
I have many of these. On the  
holotype there is practically  
no sinus on the dorsal valve.

*D. transversa* - Holotype. 8603 - Very  
wide, completely unlike *D.*  
*quadriplicata* and a good species  
Length 19.5, width 29.5, hinge 21.5  
Besides its width this species  
differs from *D. quadriplicata* by  
its deep dorsal sulcus. 2 paratypes




*Pionodema globosa* is truly a  
*Mimella*. Holotype 8609/  
Length 19 mm., Width 21.5 mm., Hinge  
13 mm., Thickness 10 mm. May be  
young of *Melonica*. V. - Convex in posterior  
half, flattened anterior half, Cardinal  
spines deflected dorsally. 12  
costellae in 5 mm at front of  
middle of ventral valve.

Paratype - definitely ventral valve  
of *Mimella*. 12 costellae in 5 mm.  
Although *P. globosa* suggests  
*M. melonica* the ribbing is  
somewhat finer.

*Pionodema minuscula* - 8610 -  
Lebanon, Lebanon, Tenn. Small  
Length 12.5 mm, width 13.5, thickness  
6.5 mm. Hinge 9 mm. Specimen  
looks like miniature *P. subaequata*.  
V. - moderately convex in profile, sulcate in  
anterior 1/4. Sulcus narrow shallow.  
Ant. commissure faintly uniplicate. Dorsal  
about as convex as the ventral 20 in 5  
mm. at front. Greatest width at  
middle.





*Plectambonites aequistriatus* - 8611  
O'Hare, Liberty Hill, Tennessee  
~~Liberty Hill~~ 10mm. in length, 13.5 wide  
Hinge 13+

Dorsal valve gently concave, sulcate medially, very finely ribbed. Faint radial undulations.

*Plect. delicatulus* = *Leptellina* (not *Tennesseensis* but related form in Lenoir.

*P. triseptatus* - large, occurs in chert with *Dinorthis* and large *Rafinesquina*. Large specimens from Holston N of Copper Creek placed here.

*P. crassus*. 8616 Holston, McMillan Co. This is probably a *Leptaena*.

*Leptaena prona* 8620 badly silicified from *Dinorthis* zone Near Goodwins Ferry. in chert.

*L. palustris* Holston, Concord Tenn.



*Rafinesquina duplistriata* -

From chert with *Plect. triseptatus*  
at Goodwin's Landing

*R. grandistriata* 8623 Holston  
at McNutt Ag. This is Cyrtostella  
Paratype of *Micostella agilis*  
is a dorsal valve of this species

Raymond cups.

*Protorhynchia* - Ridley Cumberland City Tenn  
3-15; with *Hesperorthia* east of Harrogate  
Tenn. 3-12;

*Oxoplecia* - Fugate Hill - 2-15.

Pictures of echinoids to R.T. Jackson

Cooper took from  
Harvard

Carb + Dev	=====	118
Jurassic	=====	75
Cretaceous	=====	183
		<hr/> 376



0821

(14) Oct. 23 - Section on US 64  
just east of Ocoee. Axis of  
syncline through old house  
at top of hill. Three units seen.  
Section starts 1.6 miles east  
of intersection of US 64 & 411.

Blue sandy shale weathering  
yellow brown - Sarsier type

Coarse friable ss.

Athens type shale, weathered  
yellow, softer than upper shale

Massive red & mottled earth  
probably Newala



15

Vestal marble is same one that goes through Friendsville. Holston is in a belt to the north. Farragut appears to be synonymous with Holston as it is on the Lenoir City belt.

Section at Cisco, Georgia  
 Section goes east and west of Cisco P.O. just on W side RR tracks. Section goes 0.8 mile west of US 411 and about one mile west of US 411. Strike is  $N 5^{\circ} E$  and dip on the west side US 411 is  $38^{\circ}$  to the east. Dip on east side ranged from  $35^{\circ}$  to  $40^{\circ}$ . Newala exposed on top of hill 0.8 mile W of US 411. On top of Newala is a thin  
 Mosheim and 10' of cobbly ls. containing *Bimuria*? Then follows dark gray, white-streaking shale with a few graptolites. Then follows an enormous sequence of yellowish or yellow brown weathering light blue arenaceous shale like the Sevier. This contains at least two thick beds of massive coarse-grained brown ss. This Sevier type of rock runs to about 0.1-0.15 mile east of US 411. Then comes yellow shale and reddish ss all deeply weathered, culminating in a hard ledge of red brown



(16)

sandstone terminating in a coarse conglomerate. Above the cgl. is red, thinly cleaved shale like moccasin. This is followed by yellow, thin bed shale. Then comes more red as up to the fault against the schist (Pigeon). From about 0.1-0.15 miles E of US 411 to fault is mapped as Jellico but it seems to have the character of the Bays. East of Benton just before entering gap in Sand Hills is Newala overlain by Tenorio with large Macchures. This is overlain by 10 or 15' of cobbly ls with *Bimuria*. Then comes shale. The shale east of Benton was determined by Ulrich as Athens. On the Arline tongue we saw *Cyrtotella*, *Leptellina* and *Orthis* besides the *Bimuria*.

The Tenorio was not seen west of Cisco except for Mosheim. At Benton the Newala was followed by cgl. mudstone, yellowish in color. Then came the Tenorio which seemed to be in a swale in the Newala. About 2 mi NE on this ridge at a road intersection a greater thickness of Arline appeared.



(17)

Oct. 23.

Just over bridge E of Snow Hill School, yellowish mud-cracked mud-stone & some dove ls.

Farther along the road beside the word Mahan just east of Snow Hill come dove ls. with *Strophomena* like the Wardell one. Then more yellow mud-cracked rock.

At second house (one near road) is a red bed. South side road.

(about  $\frac{1}{2}$  mi E)  
Opposite first house, on N side road east of Tenn 60 occurs top of section in silty yellow beds, with one red bed. This is Cane Creek according to Cooper. A chert ends section. Between 0.2 & 0.3 mile E of Tenn 60 are earthy shaly beds yellow with shell beds full of *Doleroides*.

At entrance to Gap occur beds with *Hebertella frankfortensis*.

On SE of intersection Mahan Gap road & Tenn 60. Thin bedded ls abounding in *Zygospira*.

At house about  $\frac{1}{2}$  mile east of Tenn 60 a thicker chert occurs below the lower one. This sets off the Cane Creek fm. between cherts.



(18)

Went on northeast to Texas Knobs and saw same section as east of Snow Hill. Along Tenn 58 we saw the lower chert zone at the top with Hardy Creek ls under it. This limestone is light blue gray when weathered and is filled with large *Eygospira*. Saw Moccasin - Dittell type limestone all along Tenn 58 on Birchwood □ from Chert Hill Church SW is about  $1\frac{1}{2}$  from the southwest corner of the □.

Went back to Snow Hill and measured section. A lower red bed occurs about 40' above the base and is sandwiched between yellowish earthy beds. A second red bed of redder, mealy rock occurs higher in the section and is exposed at first house west of Tenn 60 on Mahan Gap road.

Another excellent section appears on Providence road just west of Tenn 60. The lower red occurs about  $\frac{1}{2}$  mi SE of junction of Roy Lane & Providence road. The upper red is well exposed just east of Providence Church. Here *Tetradium* <sup>and *Pionodema*</sup> ~~were~~ found just under it. About 0.1 mile east of the Providence church



(19)

in the woods not far north of the road is an excellent section of the beds above. The lower beds are red and yellow. These rocks are dove Lowville type with rounded blobs of chert. On top of the cherty beds occur Mosheim type lined tones.

In this belt above the cherty beds occur Pionades and Zygospira. Higher and below the chert a few Calcareites produced abundant Doleroides. All this suggests Lebanon-Witten.



East of Snow Hill

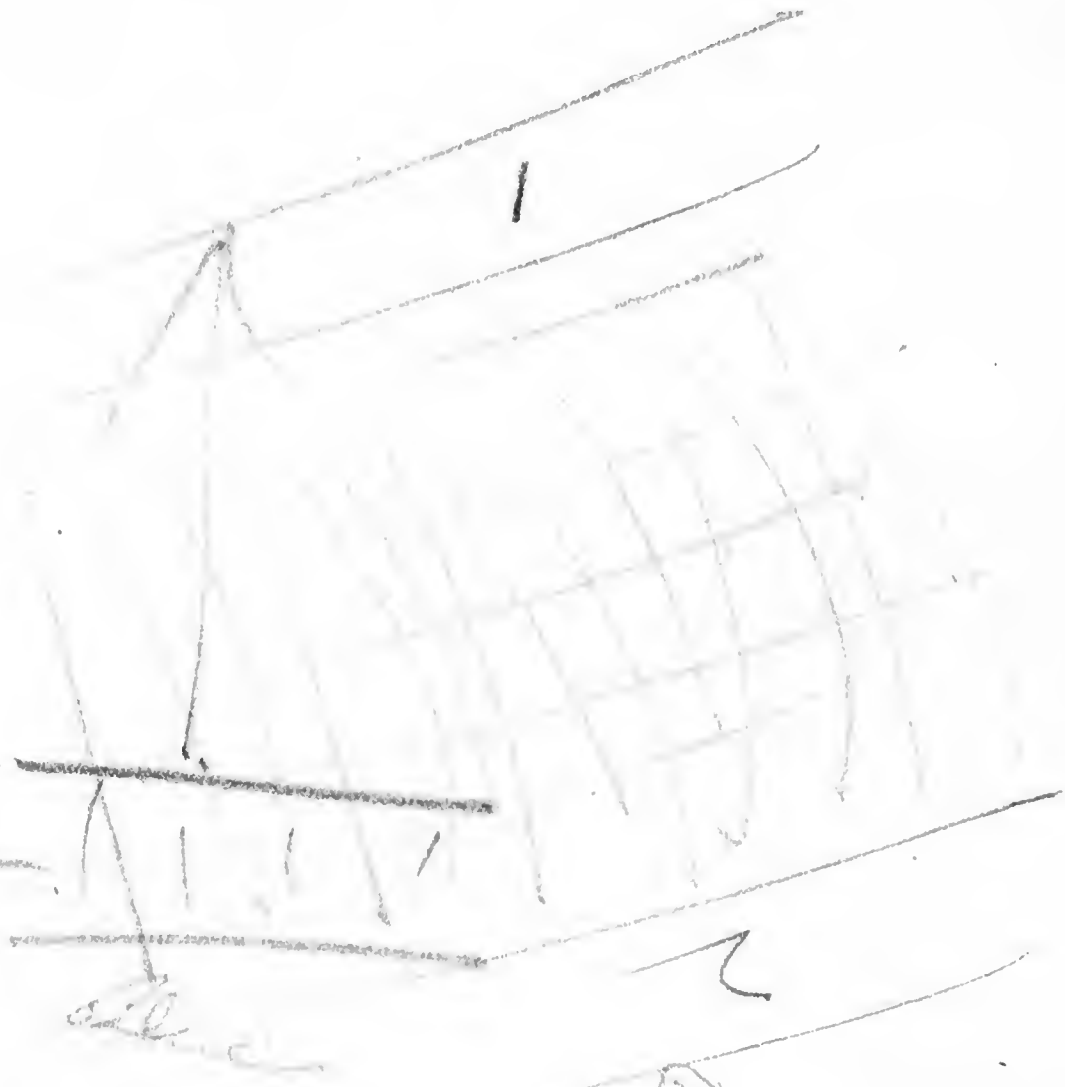
1"

Yellow +  
reddish  
mud rock

Chick  
creek

4"

Light blue  
gray ls. Hardy Creek  
Zygospira



Hardy Creek  
Zygospira

5-6  
Ferm



(20)

827

October 25 Went to St. Clair, Ampyx

americanus just on top of Arline beds suggests same relationships as at Catawba. At bridge over Robertson Creek occur cobbly beds which suggest middle Athens, the slabby and ling beds, as the cuts on the Hiwassee River. It suggests that the Arline, the graptolite shales and the cobbly, slabby ls all are equal to type Athens at least as displayed at Charleston.

Ls ends about opposite 2nd house S of bridge. On the curve just south of the house is hackly cherty yellow shale. On S side next St. Clair comes Sevier, massive blue weathering yellow, nearly vertical.

Near Mooney Cemetery same blue-gray yellow-weathering rock. Contains a few fossils.

Thick bedded Sevier with *D. transversa* just north of road east, S of Mooney Cem. Just S of road east come limestone with *Cystid plates* and *Oligorhynchia*. This is



(21)

covered by thin-bedded ls and some yellow shale. The limestone dark gray to black, fine-grained, mud-rock lithology well-mud-cracked. axis of syncline just south of first house S of road east 0.7 mi N of Oates.

Cobbles just S of Whitehorn occur at base of cobbly beds above the shale. The Otes Lingulas must occur near the top of the cobbly beds.

Returned to section north of Otes to see mud-cracked beds. Coop (B.N.) identified the mud-cracked beds as his Bowen formation. Above the yellow gray mud-cracked beds come red beds near the middle of the hill. Above that we did not go. The Bowen was thought by BNC to be 60 feet thick. There would be little within there.

The section from St. Clair south is thus:



(22)

Thin skin of Witten on hilltop  
 Bowler mud-cracked beds.  
 Cystid + bryozoan beds with Oligorhy.  
 Serier type shale.  
 Hard sandy band with Deniothis  
 Serier sandy shale.  
 Cobble ls. and shale  
 Dark shale with Graptolites  
 Aline  
 Mosheim

---

Returned to Gutliefs Gap. Found  
 Deniothis transversa about 0.4  
 miles N of the church. The  
 cystid beds appear 0.3 mile south  
 of the church behind a house on  
 east side road. Above these  
 is a hard sandstone band  
 suggesting the Telling ss.

On the hill just SE of the  
 church are beds stuffed with  
 bryozoans and cystid plates  
 suggesting the Cystid bed  
 above Deniothis. Where exposed  
 SE of the church it reverses  
 dip. The beds above dip north  
 and those on the other side



(23)

of the turn dip south. This  
puts the *Zygospira* - *Oligorhynchia*  
beds above the Cystid bed in  
the hill beside the church and  
also on the hill southeast of  
the church where they dip south.  
We saw no *Bower* in this  
section.



1950

0831

Virginia Sept 19-23.

September 19 -

Visited locality @ 6.5 miles NE of Luster's Gate. Large channel in Knox filled with thick succession of limestones. Near base *Posticellula* abundant. Slightly higher *Dactylogonia* abundant. *Maclurea* beds overlies. The brachiopod beds and all covered by rock suggesting Lincolnshire but without any diagnostic fossils being seen. ~~Blackford~~ *Blackford* overlies the whole.

About a mile or two SW at locality visited last year *Blackford* lithology with fossils occurs in coarse calcarenites forming a great reefy mass.

The calcarenites at the base of the channel in the Knox are suggestive of the *Lenoir* beds about 3 miles SW of Marion, Va.

Lunch 70¢ Sept 20  
 " 70¢ " 21  
 " 20¢ " 22  
 " 60¢ " 23

September 20 - About 1.15 miles south of Luster's Gate on road to Ellett. West of road long section has *Blackford* like beds at base followed by *Maclurea* bearing limestone with 2 bands of *Mosheim* lithology. This is followed by a thick section of shaly ls containing abundant *Hesperorthys* & *Multicostella*. *Opikina* is also present but rare. Black chert also present. This part is identified with *Whittle Creek*. Above WC occurs black granular ls with

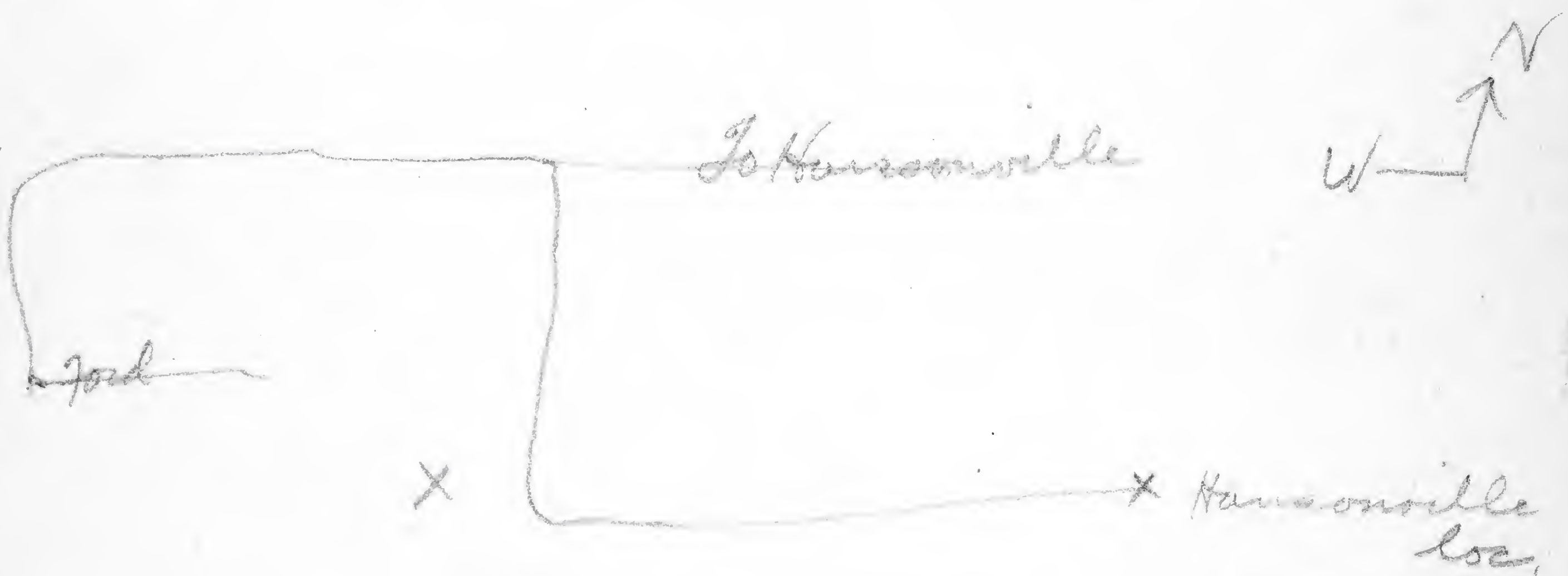


some chert. The lithology is like Lincolnshire.

Sept. 20<sup>1</sup> 0.6 mile farther south and on W side road red sandy shales occur in contact with Knox. Overlying this are Blackford-like dolomites followed by red-cherty thin-bedded ls. containing Minella. Above this is the Whistle Creek followed by Lincolnshire lithology. This is overlain by nodular ls. looking like upper (Christiania) Lenoir. Botetourt follows the nodular beds. Then comes a thin calcarenite and the Athens. Whistle Creek here abounds in a species of Nidulites.

Sept. 20<sup>2</sup> - About one mile south of Ellett on west side of road about 100 yards west of the Hy. about 10' above the Knox rock is crowded with Rosticellula. The rock also contains ragged fragments of chert. Rock above Rosticellula beds reminds strongly of lower Lenoir, shaly rock with blue patches. The rock has blue patches in a shaly matrix. Considerable dolomite occurs in the lower part of the section.







Sept. 21. - Visited Chatham Hill  
locality. Small parallel-sided  
Sowerbyella occurs about 50 or 60'  
below the Oxopleura beds. These  
beds here are mapped as Athens  
and are on the strike with the  
Athens at Saltville.

In afternoon visited Pembolt  
south of Hansonville and a locality

Sept. 22 - Visited Hagan school  
and new exposures at Cedar Point  
School. Paleostrophomena occurs  
in tongues of shaly-fracturing  
limestone suggesting upper Tennois  
beds.

Get Newman send Thesis



May 16-19, 1957

0834

May 16

Lt. Washington 9:30.

Arrived Harrisburg 12:30 EST

Went to Green Mount Church

and spent most of day in

vicinity Va. A few 617 has

been changed to 617 by 910.

At junction of 777 and 761

on east side of 761 occurs an

excellent exposure of West

Market-Whittle Creek with

Lincolnshire at top of ridge

This can be followed as a

ridge nearly parallel to the

road to Co. by 721. At

Junction 721 and 910 (617)

occurs Martinsburg with

Cryptolithus.

On 910, west side about



0835

$\frac{1}{4}$  mile N of intersection of  
910 + 777 occurs exposure of  
Martinsburg with *Rensselaeria*  
and abundant silicified  
*Cryptolithus*.

South of Greenmount church  
 $\frac{1}{4}$  -  $\frac{1}{2}$  mile at junction of  
Va 910 and 768 is Martinsburg  
with Salona fauna. Here

I found a large *Rensselaeria*.

Some good brachiopods  
were taken from a lane  
just S of church and about  
150 yards from church.

May 17.

Side road 1736 about 150 yds.  
NE of U.S. 250 at Jennings Gap,  
Overturned Martinsburg. Athens



0836

in lower part of section followed by *Tidulites* beds which are lowest part of section in the road cut. This is followed by Granular ls. (St. Luke?) or Colliers town. No Oranda was seen. Long Martinsburg overlies the Granular beds. This has big *Gowerbyella* and large *Salmanellids* suggestive of Curdsville. *Cypholittus* also present. It looks transitional between Curdsville and Martinsburg of eastern belts.

May 17.

Long and thick sequence of Oranda just east of



0837

Junction of Va 616 and  
Va. 699. The Oranda must  
be 100' thick. Cryptolithus  
abundant a long distance  
above the Oranda. This is  
locality of silicified Cryptolithus.  
2.4 miles N23°E of Spring Hill, Va  
May 18

0.1 mile NNE of Va. 617 and 753  
on 617 is excellent section of  
low Edinburg. Contact of  
Botetourt with Lincolnshire  
about 450 feet west of Va 617.  
Base of Botetourt conglomerate  
with ls. pebbles up to 4" in  
diameter. Botetourt about 20-  
25' thick. Beds above B. are  
thin-bedded, often platy with  
Tretaspis and Ampyxina.



These are like Lacey Spring beds.  
On east side of road in  
lower Edinburg occurred a  
lens of Christiania in black  
heavy slabby ls.

### Oranda

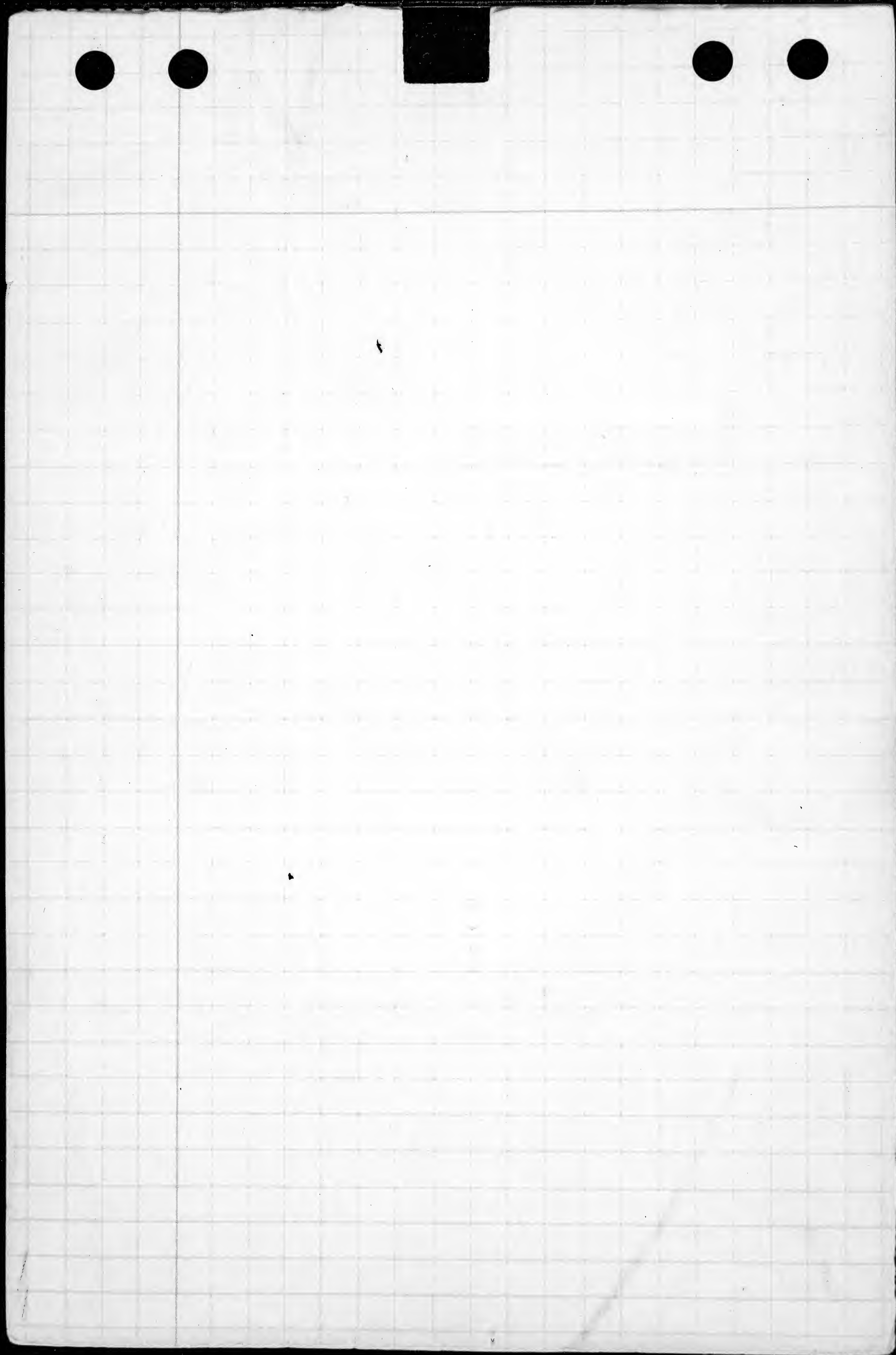
$\frac{1}{4}$  mile east on 782 of  
junction with 617 is excellent  
exposure of Oranda with an  
excellently rotted bed.

Just east of Broadway  
road 759 makes a U-loop.  
Inside loop are excavations  
for a new road. Here lower  
Athens with Robergia and  
Tretaspis. Also Elliptoglossa. Locality  
is 0.2 mile W. of Va 42 intersection  
with Va 259.



M1752 Lincolnshire on  
Va. hwy. 613 at east end of hill  
1/4 mile west of sharp bend  
on west side Long Blade about  
2.7 miles N 80° E of Spring Hill,  
Parnassus □, Va. good  
exposures of Botetourt-Effra  
and Lincolnshire.







0840

Millstream Cemetery  
about 1 mi. E of US 11  
3 mi. N of Whitehouse

Collyer  
Ellensburg  
coarsely  
granular  
with  
f. silts  
Siltstone  
Burning  
Cobbly  
ls.  
concretionary

30'

2-3'

35'±

New  
Market



UNITED STATES NATIONAL MUSEUM

Field Label

No. -----

FORMATION:

LOCALITY:

Collector:

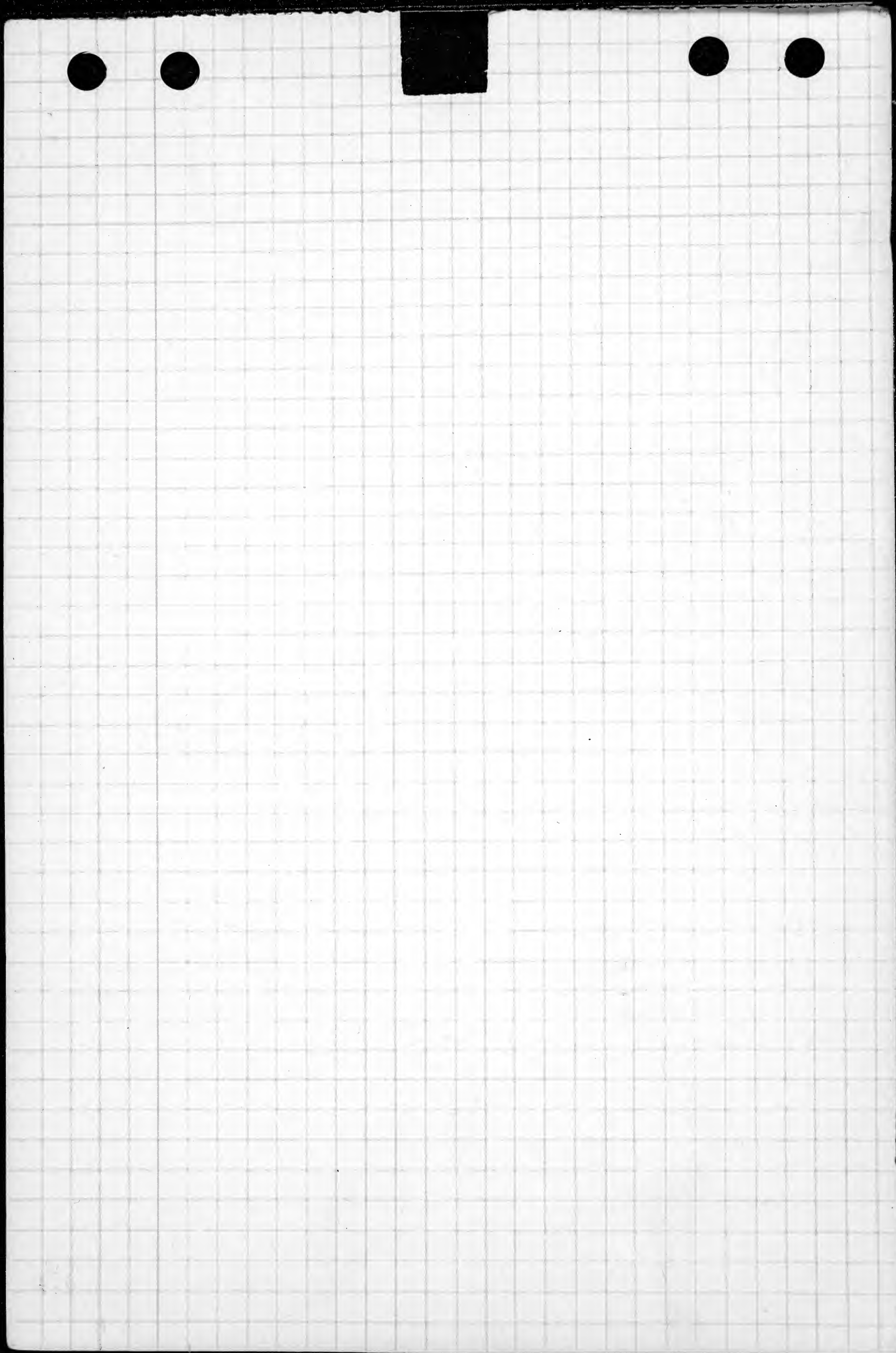
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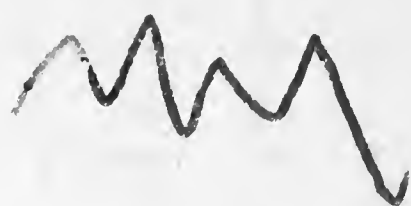
Memoranda:







July 9, 1955



① Consists of two parts. A. Along Conodoguinet Creek  $\frac{1}{4}$  mile NW of bridge on west edge of Carlisle  $\square$  grayish limestone in upper part St. Paul group local trilobites and Oligorhynchina.

B. Upper Chambersburg (Oranda) in swale on east side of dirt road going NE about 0.6 mile NW of bridge over Conodoguinet Creek on W edge Carlisle  $\square$ . Several pieces for etching.

② Dark St Paul or Lindsborg ls with algae. First right (about  $\frac{1}{4}$  mi. east of paved road) east of paved road on Newville sheet. between turnpike & river.

③ On New Bloomfield  $\square$ ,  $\frac{3}{4}$  mile east of Hagerstown on U.S. 11 and  $\frac{1}{2}$  -  $\frac{3}{4}$  mile W of U.S. 11. Chambersburg on both sides Conodoguinet Creek. at bridge

Lunch, .60; supper 1.50; room 3.50

breakfast .75, lunch .60 Supper 1.00



Check up on posterior

0858

June 17

Left Ansonia about 8:30 A.M., reached  
Jagersoll about 3:30 P.M. First quarry  
just NW of Ontario Hy 2 about  
12 miles NE of Jagersoll, Quarry  
of Chemical Lime Co. There are about  
50-90 feet of Detroit River (probably  
Lucas & possibly some something  
else wells under. The Lucas comes  
cherty beds of *Amphigenia* zone of  
Lower Onondaga. The cherty zone  
under the Lucas is probably  
thicker than where it outcrops.

The Lucas is overlain by  
Columbus with *Paraspirifer* very  
wide-limbed *Spirifer* (*macrus*?),  
many *Coriocardium*, good typical  
Columbus limestone. About 15' of  
Columbus occurs at this quarry.  
Almost in the city of Jagersoll a well  
shows 45' of the cap rock (Columbus).  
This could be partly Dundee or  
Delaware.

In a quarry just SW of R.R. station  
at Jagersoll is a deposit quarry with  
Silurian in lower part and with  
cherty Onondaga about 10' on top.  
Here are many corals and a few  
brachiopods including *Amphigenia*.  
This is lowest Onondaga and  
according to Dr. Ehlers and belongs  
under the Detroit River of the  
Jagersoll Quarry.



27  
2

76  
15 3  
36  
19 1